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All communications to be addressed:
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T. PASCOE,
Minister of Agriculture.

POINTS FOR PRODUCERS.

Wheat Varieties in the South-East.

Though the agricultural lands of the South-East are not generally well suited to the production of wheat, it has been the practice at the Government Experimental Farm at Kybybolite, and the usual practice amongst farmers of the district to seed a certain portion of the farm each year to this cereal. At Kybybolite four varieties have been grown annually since 1912. These varieties have yielded the following average annual returns for the past eight seasons:—White Tuscan, 18bush. 27lbs.; Queen Fan, 16bush. 37lbs.; Federation, 15bush. 19lbs.; Yandilla King, 14bush. 27lbs. Of these varieties, White Tuscan, Federation, and Yandilla King are well-known mid-season wheats in this State. Queen Fan, which occupies second position on the list, is a production of the Roseworthy Agricultural College. It is the result of a cross between Carmichael's Eclipse (a South Australian selection) and Fan (a Farrer wheat), and is doing well in many of the heavier rainfall districts of the State.

Tobacco Culture in South Australia.

Tobacco has been grown with a fair measure of success by Messrs. W. E. Daddow and Hunt Bros. at Mount Barker. These growers have, during the past season in conjunction with the Department of Agriculture, conducted experimental plots. Additionally, a number of tests in a smaller way have been made by growers in the Hills and South-East principally. The Department of Agriculture has secured seed of a number of varieties of cigar, plug, and cigarette types and this will be distributed amongst prospective growers on application.

Subterranean Clover.

On the relatively poor and hungry soil in the Kybybolite district in the South-East, Subterranean Clover has been sown with very satisfactory results. It is now extending over large areas of pasture and providing good feed to the exclusion of the more or less useless plants that are common to the soil and climatic conditions mentioned. This fodder plant is an annual, but its general habit of reseeding itself is such as to make it practically equal in value to a perennial fodder. The prevailing method of seeding is to distribute a small quantity of clover (say, from ½lb. to 2lbs.) with the cereal crop, the land being subsequently spelled for 12 months to allow the clover to establish itself. The experience of the Department of Agriculture is that Subterranean Clover does particularly well on sour soils, and there are areas of this type of soil in the Hills and South-Eastern districts, which would probably afford much better pasture if they were seeded with this useful plant.

Black Spot on the Vine.

The development of fungus diseases of the grape vine and fruit trees is governed largely by weather conditions, and, although South Australia has experienced one or two sharp spells of cold, the winter season this year, on the whole, has been comparatively mild in so far as general temperatures of the soil are concerned. This, combined with the fact that the State is experiencing a good average rainfall will tend to stimulate fungus pests. The Horticultural Branch of the Department of Agriculture suggests, therefore, that growers whose vines were affected with Black Spot during the past season should be prepared to treat their vines with sulphuric acid or sulphate of iron solutions directly the prunings are disposed of. In cases in which a severe attack was experienced, the vines should be treated twice; first, just after the pruning is over, and secondly, as close up to the time of the bursting of the buds as is practicable, but not within a fortnight of their normal time of opening.

Downy Mildew.

The climatic conditions experienced last year were fortunately totally unsuited to the development of downy mildew of the vine, and, consequently, those growers who went to the trouble of spraying as a preventive measure were no better off than those who omitted to do so. Such will not always prove to be the case, however. Because of this, the Horticultural Branch of the Department of Agriculture recommends growers to have their spraying outfits and their Bordeaux or Burgundy constituents ready to hand to begin operations soon after the vines leaf out. Practically nothing can be done to the vines just now to ward off this disease.

Size of Egg.

At the present time the best samples of market eggs are graded to a 2oz. standard. The producer cannot reasonably expect to receive as much per dozen for small eggs as for large. The Poultry Branch of the Department of Agriculture, therefore, advises poultry-keepers to breed only from hens which lay full-sized eggs, and see that they are mated to a male bird, the son of a hen which laid large eggs. When selecting eggs for incubation it is well to reject any which are under 2oz. in weight, are rough shelled, or mis-shapen.

Peaches for Canning.

During the past season the Horticultural Branch of the Department of Agriculture was frequently asked by the proprietors of canneries for information as to where they could procure cling-stone peaches. The scarcity of this type of peach in this State resulted in thousands of cases being railed from Victoria to the canneries here to be processed. Prospective planters of peaches, particularly those within reasonable reach of the canneries, would do well to ascertain the most suitable varieties with special regard to their periods of ripening. It is possible, by judicious planting, to distribute the picking of the fruit over an extended period. A start can be made with Tuscan and Levis ripening in January, with Sims, Phillips, Goodman's, Choice Golden Queen, Puller's, and Riverside Late following in that order and carrying on until April. Although it is not desirable for every grower to plant all of these varieties, they are all valued by the canners on account of their firm yellow flesh with very little color around the stone to affect the appearance of the syrup when the fruit is canned.

Herd Testing in the Laura District.

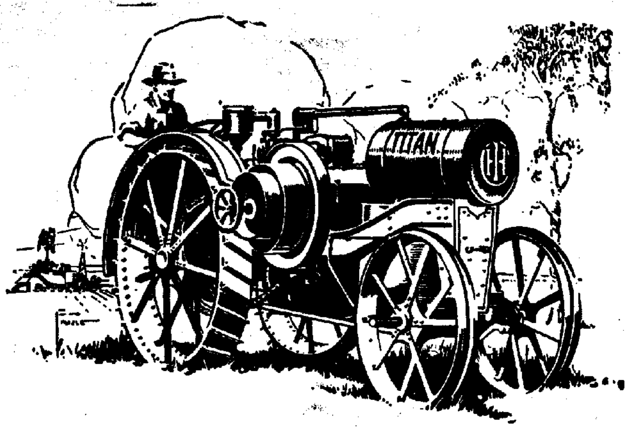
At the invitation of local residents, the Director of Agriculture (Prof. Arthur J. Perkins) visited Laura and the surrounding districts recently with a view of discussing the possibility of establishing a herd testing society. Two meetings were held and, as an outcome, it has been decided that parties interested locally should canvass the district with the idea of gauging the support likely to be afforded a society proposed to be formed with headquarters at Laura and including, if possible, dairymen occupying country between Mount Remarkable on one hand to Georgetown on the other.

Sub-packing or Rolling.

Since 1908 the Department of Agriculture has carried out cultivation tests with wheat in low rainfall conditions at Hammond in conjunction with Mr. T. Griffin. The value of the sub-packer, which some years ago was boomed as an aid to wheatgrowing with so-called "dry farming" practices, was tested. The result of this work enables the Department of Agriculture to say that on a 6in. ploughing sub-packing will give an increase of about 1bush. per acre greater than the returns secured from ordinary fallowing. It was also ascertained that rolling gave returns equal to those secured from lands sub-packed. Because of the fact that the roller is more likely to constitute portion of the ordinary equipment on the wheat farm there is nothing to recommend the outlay or additional capital in the purchase of an implement otherwise useless.

Wheat at Minnipa.

Each season since 1918 wheat has been grown at the Government Experimental Farm, Minnipa, on fallow, new land, and stubble land. For that period the average yield of grain on fallow has been 18bush. 23lbs., on new land, 13bush. 33lbs., on stubble land, 11bush. 3lbs. The average annual rainfall for the period under review was 14.76in.



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Preparation of Land for Orchards.

At the State Experimental Orchard at Blackwood a test of different methods of treating ground prior to planting with fruit trees has been made. Fourteen years ago three plots were planted with the same varieties of prunes, apricots, apples, peaches, and pears. Two of the plots were sub-soiled prior to planting, the third being planted after the ground had been ploughed to a depth of about 8in., the usual method of soil preparation in the Hills district. All of these trees progressed without any apparent differences being revealed until the dry years of 1913-14 when those on the land which had not been broken deeply with the sub-soiler showed a distinct decline in growth. Nor have these trees been able to recover the leeway during subsequent years. Basing its opinion on this and similar results elsewhere, the Horticultural Branch of the Department of Agriculture urges intending orchard planters to break the soil deeply either with the sub-soiler or with explosives. The wisdom of this practice is further borne out by the fact that observation in practically any orchard in timbered country reveals a marked improvement in the growth in trees that have been planted on spots formerly occupied by large standing timber and disturbed to a depth in clearing operations.

Curl Leaf in Peaches.

The curling and blistering of the leaves of the peach are due to the attacks of a microscopic fungus. It occurs inside the tissue of the leaf. When the distorted leaf reveals evidences of the presence of the pest it is too late for the grower to prevent the injury for that season. The fungus first attacks the tree at the time of the opening of the buds and the young leaves are infected by spores long before any external evidence of the presence of the disease is noticed. The remedy, therefore, is essentially preventive. It consists of spraying with copper compounds, such as Bordeaux or Burgundy mixtures, or with lime sulphur compound.

Black Aphis.

In cases in which peach trees are affected with black aphis, the Horticultural Branch of the Department of Agriculture suggests that tobacco might be included with the copper compounds, thus using a combined spray for the treatment of curled leaf and black aphis. The usual indications of a first infection of black aphis consist of a premature opening of some of the flowering buds which are growing on twigs low down in the tree, and, later on, of the presence of ants running up and down the branches If any such early flowering buds be examined on the under side, the presence of the pest will be revealed in the form of a female aphis which is possessed of remarkable powers of reproducing her species as soon as the sap becomes active to provide her with nutriment. The Horticultural Branch of the Department of Agriculture advises that the best time to attack this pest is before the leaves burst, because there is little obstruction to the penetration of the spray. Further, insects killed at this stage mean many hundred less as the season progresses. It must be recollected that these insects are killed by contact, and, consequently, they must be reached by the spray for it to prove effective. The most satisfactory way to eradicating the pest is to follow up the first application with two or three sprayings, within a period of a week.

Feeding Poultry.

On most poultry farms the staple foods used are wheat, bran, pollard, chaffed green food, animal food, mineral salts. All should be of first quality. No greater mistake can be made than to feed poultry on damaged inferior foods, because they lack full feeding qualities and may cause sickness. Although a few owners feed on dry food only (including wheat, which is known as dry mash), the majority adopt the wet mash—a soft food method. Wet mash is usually made as follows:—One part wheat bran scalded in soup made of meat meal and adding common salt. Measurements are by bulk. Then chaffed green food is added to the scalded bran and well mixed. This is dried off to a crumbly mash by adding and thoroughly incorporating two parts of pollard. Meat meal soup is made by using varying quantities of meat meal, ¾lb. per 100 birds as a rule up to 1½lbs. when bringing the birds on to lay. Salt is added to the soup at the rate of 1oz. per 100 birds. Green food varies in quantity from a minimum of three parts by bulk in winter to as much as eight parts (80 per cent.) of the bulk of the mash in hot weather. Bran contains valuable phosphorus compounds, etc., and from green food are derived many valuable mineral salts. The Poultry Branch of the Department of Agriculture states that the mash should be fed in proper troughs, &c., and on no account thrown on the ground. The grain should be fed in straw or other litter to promote exercise.

Ducks.

There are many breeds of domestic ducks. Of large breeds, the famous English white duck (the Aylesbury) is well known, but is not bred largely in Australia. The Pekin (or Peking) duck is of equal size, but has semi-erect carriage and the under plumage is canary yellow. The head is short and thick and the bill is short. The breed is well suited for market duckling production, also for export. The Rouen is a beautiful colored breed of large size, not so well suited for export. The Indian Runner (white and fawn varieties) are wonderful layers, but are too small for market or export. Medium breeds as Orpingtons, Khaki-Campbells, and other new varieties derived from Indian Runner crosses are excellent for family use. The South American duck mis-named (and invariably mis-pronounced) Muscovy is a large, coarse, but wonderfully prolific breeder much in favor in

Australian markets, but not approved in English markets. There is a good demand in Adelaide for the Christmas trade. Ducklings were exported some years ago and realised good prices in England. The Poultry Branch of the Department of Agriculture advises that there is ample scope for duck breeders who adopt proper methods of breeding, feeding, &c.

Pigs in the Mallee.

Increasing attention is being given to pig-raising in the mallee areas of this State, and to meet the demand for pure-bred Berkshires, extensive breeding operations are being carried out at the Government Experimental Farm at Veitch. As a foundation, the pure-bred herd was transferred from the Mount Remarkable Training Farm, and, under the conditions prevailing at Veitch, the animals have developed remarkably well. The method of running the herd there is that known as the "open pen" system, under which the use of sties is dispensed with, their place being taken by large runs with smaller yards for farrowing purposes. Under conditions where the climate admits of it, this method has given very satisfactory results, involving as it does, a low capital outlay for equipment.

Conference at Pinnaroo.

Representatives of Branches of the Agricultural Bureau situated along the Pinnaroo line of railway will meet in Conference at Pinnaroo on Tuesday, August 15th. At this gathering papers will be read by Mr. H. Ledger (Pinnaroo) "Side Lines on the Farm"; Mr. R. S. McKenzie (Pinnaroo) "Threshing"; and Mr. H. Kirly (Parilla) "Best Varieties of Wheat and Oats to Grow in this District." Addresses will be delivered by the Chairman of the Advisory Board of Agriculture (Mr. W. S. Kelly), and the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S.). In addition, the Conference will be attended by the Dairy Expert (Mr. P. H. Suter), the Instructor for Mallee Lands (Mr. C. P. Hodge), and the Secretary Advisory Board of Agriculture (Mr. H. J. Finnis.)

Supplement Natural Pasture for Dairy Cows.

Where there is an abundance of succulent growth on natural pasture, as is the case in many districts at the present, it is desirable that the dairyman should supplement this by the addition of a small quantity of hard feed to the ration of dairy cattle. The Dairy Branch of the Department of Agriculture suggests the use of oaten or wheaten chaff, together with between 2lbs. or 3lbs. of bran morning and evening. The prices ruling for bran at the present time are high, and as a substitute carefully garnered, leafy, lucerne hay, chaffed, or bruised oats is

suggested, between 3lbs. and 4lbs. of either being used in the place of 2lbs. or 3lbs. of bran. A ration of this nature should not only meet adequately the demands of the system of the animal, but also ensure a sufficiency of nutriment to provide for milk production.

Herd Testing Society at Mount Gambier.

The second society formed in connection with the Government's scheme for the award of subsidies and prizes to herd testing societies commenced operations on Tuesday, August 1st. It is known as the Mount Gambier and District Herd Testing Society, and includes in its membership 20 dairymen representing approximately 450 cows. The officers of the Association are:—President, Mr. R. P. Pritchard; committee, Messrs. W. A. Palamountain, R. Smith, J. L. Heaver, E. Tollner, A. W. Kilsby, and E. S. Alcock; recorder, Mr. J. Davidson.

Planting Citrus Trees.

The rise in soil temperature which takes place early in August heralds the time for transplanting evergreen trees and shrubs of practically all kinds. In the orchard these are represented by the citrus, the loquat, and the olive. Returning vitality in the citrus tree is first evidenced by the appearance of small pale green shoots in the axils of the leaves, more particularly on the ripened wood. With this movement root activity starts, and the Horticultural Branch of the Department of Agriculture states that it is desirable that these trees should be lifted and placed in their permanent positions before the axillary buds have developed to any extent. The tree will then receive the benefit of the primary movement of sap and the sympathetic extension of the root system which takes place simultaneously. If the trees are allowed to remain in the nursery bed until considerable growth is made by the buds, this first output of root and branch will, in the majority of instances, be destroyed in the transplanting. The loss is increased by the fact that the trees receive a much greater check. Citrus nursery trees which have grown in fairly stiff clay soil may be lifted with a considerable coating, if not a complete ball, of earth adhering to the roots, and thus preserving their vital energies. Unfortunately, most of the citrus trees in this State are propagated in free nursery soils, which do not adhere to the roots when the trees are being lifted. Notwithstanding that the nurseryman places artificial balls of earth around them, they suffer from the exposure to the dry air (which cannot be avoided when the soil is shaken from them), even if only for a few minutes. Owing to the fact that these trees retain their foliage and transpire moisture through the same during the lifting period, every care should be taken to prevent all of the root points from being dried up or broken off. Each tree being prepared to be set in its permanent position should be carefully examined, and if the root system has been much reduced, the branches should be reduced by pruning, so that the water of organisation in the plant is not transpired through the leaves too rapidly. Each tree when set in its position should have the soil firmly packed in contact with the roots and the air driven out by the application of water, even if only a bucketful be applied.

The Cultivation of Orchard and Vineyard Land.

In most localities orchard and vineyard proprietors are now ploughing their plantations. Some will be giving the second shallow ploughing, levelling the soil back into its normal position, and burying weeds. Others will be giving the first and only ploughing which they are in the habit of giving their land. The Horticultural Branch of the Department of Agriculture has found that those who have had most experience in these matters realise how very rapidly clay loam soils harden when they have been turned up from what seemed a very wet, compacted condition. Two or three days' bright sunshine reduces them to a hard, crusty series of lumps, which later on refuse to be broken by the operations of the cultivator. When there is a danger of this taking place, it is a good plan not to wait until the whole of the vineyard or orchard has been ploughed before running the harrows or cultivator over the surface of that portion which has been ploughed, and threatens to harden as described. In practice, it has been found, as the season progresses, that not more than a day's ploughing can be safely left without disturbing the furrow slice. Working on these lines, the ground will not be padded down if too much rain should intervene to enable the cultivator to penetrate and stir up the soil at a later date. The practice suggested provides a better soil mulch than if one trusts to the use of the land roller to break the crusted soil when the whole of the ploughing has been completed. It will be recognised that these remarks do not apply just at present in the hilly districts, where rain may be reasonably expected to fall during the next couple of months, but out in the open country devoted largely to grape vines they should prove worthy of serious consideration.

Winter School for Farmers.

The curtain was rung down on the second Winter School for Farmers at the Roseworthy Agricultural College on Friday last. Prior to leaving for their homes, 43 farmers who had attended the course entertained the College staff at a social gathering. Generally, the feeling amongst the farmers who attended was that they had spent a most profitable and interesting fortnight at the School. They expressed the hope that a similar gathering would be held next year. As a mark of their appreciation, they presented to the Tassie Memorial Library at the College a copy of Bean's "Official History of the Great War." The students mentioned that access to this library had impressed on them the importance of standard text books on agriculture as means of assisting them in their farming operations.

Salt Patches on Irrigated Lands.

In the Berri Experimental Orchard there is a salt patch which has been extending progressively since the land was first submitted to irrigation. The attempt is about to be made to reclaim it by means of drainage and leaching. It is considered that this salt patch offers special difficulties, and it is believed that its successful reclamation, if secured, should prove a valuable object lesson to River settlers who are suffering from similar difficulties.

Dried Figs.

For some time past the Berri Experimental Orchard has been putting on the market last season's dried figs. In view of strictures recently passed on some of the River dried fruit that has found its way on to overseas markets it is worth emphasising that, in the opinion of those able to judge, the four-crown Berri dried figs are unequalled anywhere in the world.

IMPORTS AND EXPORTS OF FRUIT, PLANTS, ETC.

During the month of June, 1922, 817bush. of apples, 12,225bush. of bananas, 1bush. of oranges, 286bush. of passion fruit, 495bush. of pineapples, 210 packages of coconuts, 3 packages of peanuts, 17,823 bags of potatoes, 556 bags of onions, 32 packages of trees, 46 packages of plants, 53 packages of seeds, 6 packages of bulbs, and 3,423 empty wine casks were examined and admitted at Adelaide and Port Adelaide under the Vine, Fruit, and Vegetable Protection Acts, 1885 and 1910. Of these, 8 packages of trees and 40 empty wine casks were fumigated, and 1 package of oranges (no fruit fly certificate) was destroyed.

Under the Federal Commerce Act, 598 packages of fresh fruit, 728 packages of citrus fruit, 41,267 packages of dried fruit, 5 packages of preserved fruit, 10 packages of jam, 2 packages of honey, and 8 packages of plants were exported to oversea markets. These were consigned as follows:—To London—31,799 packages of dried fruit, 211 packages of oranges, 598 packages of apples. To New Zealand—6,411 packages of dried fruit, 517 packages of citrus fruit, 8 packages of plants, 8 packages of jam, 1 package of sauce. To South Africa—2,950 packages of dried fruit. To Batavia—91 packages of dried fruit. To Fiji—1 package of dried fruit. To Japan—2 packages of preserved fruit, 2 packages of jam, 2 packages of sauce, 2 packages of honey. To China—15 packages of dried fruit.

Under the Federal Quarantine Act, 2,231 packages of seeds, &c., were examined and admitted from oversea sources.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"A. D.," World's End Creek, reports death of sheep. Died without any apparent pain or struggle. Post-mortem showed bladder very black and shrivelled. Intestines filled with a quantity of pink-colored fluid. Appears as though sheep cannot pass water.

Reply—The post-mortem appearance points to urinary obstruction as the cause of death. The obstruction is usually a calculus (stone) in the tube of the pizzle, and if you carefully trace the passage down from the bladder you should be able to locate it. In this region a very small stone will cause a fatal obstruction. In some cases the obstruction occurs at the end of the pizzle, the opening being very small, and if the obstruction can be located here it can be removed, if necessary the wormlike appendix of the penis being removed. For obstruction higher up in the pizzle no treatment can be advised.

"Mrs. E. R. M.," Borrika, has cow calved three weeks; now has one quarter affected with mammitis.

Reply—Continue bathing with warm water. Give the quarter plenty of gentle hand rubbing with olive oil. Milk out the quarter thoroughly several times a day. The trouble was probably due to the absence of attention at time of trucking. Inflammation of the udder (mammitis) may lead to loss of the quarter, but if you are now getting a little milk back you should persist with treatment.

Hon. Secretary Blackheath Agricultural Bureau asks: "Are the flowers of Scotch thistles likely to kill or injure sheep in any way?"

Reply—The flowers of the Scotch thistle are not likely to kill or injure sheep. They are eaten readily, and in some districts sheep fatten on this plant.

"T. E. M.," Renmark, asks:—"Is it possible to have cancer of the stomach?"

Reply—It is quite possible for a horse to have cancer which may affect the intestines or stomach.

Hon. Secretary Coorabie Agricultural Bureau reports mare with a swelling of the head, body, and legs. The swellings feel like jelly when touched with the hand.

Reply—This swelling is due to some circulatory disturbance, and is seen in many diseases. The only treatment necessary in this particular case would be saline medicine in the drinking water (Epsom salts and saltpetre), laxative diet, and a little gentle exercise. These swellings frequently occur in cases of general debility from worms, &c., and such cases require special treatment, generous diet, &c.

"W. H.," Spalding, reports draught horse with swollen leg and the hair coming off in patches.

Reply—Try an application of sulphur ointment, made by mixing one part of sulphur with four of lard. Rub this in thoroughly after first washing the leg and allowing it to dry. Repeat this treatment three times at intervals of one week.

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Hoping this is of some use to you,

Yours faithfully,

(Sgd.) LES. J. COLLIVER.

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Hon. Secretary Agricultural Bureau, Kybybolite, asks treatment of greasy heels in horses.

Reply—I advise you to try the following dressing:—Goulard's extract, 3oz.; glycerine, 10oz.; methylated spirits, 10oz.; mix. Apply daily with a brush. Treatment will be more effective if you clip the hair off the legs. Do not wash with soap and water. Grease has a tendency to recur. Examine the parts from time to time, and if necessary repeat the treatment.

Hon. Secretary Agricultural Bureau, Morchard, asks information as to the best treatment for retention of the afterbirth in the cow.

Reply—The administration of a dose of purgative medicine, such as Epsom salts 1lb., treacle cupful, warm water one quart, is often effective in causing the cow to expel the afterbirth. Should the membrane be retained more than 24 hours it is desirable that it should be removed by hand, but no undue force must be used in doing so. Should there be any difficulty in removal, douch daily with weak, lukewarm permanganate of potash solution (Condy's).

(2). A cure for milk fever.

Reply—The only treatment for milk fever is inflation of the udder with air. Full details regarding this will be found in the *Journal of Agriculture*, October, 1916, page 214.

"H. J. J.," Parilla, has six-year-old gelding who suffers from recurring difficulties in passing water.

Reply—The symptoms suggest more particularly some bowel irritation, such as might arise from the presence of a small quantity of sand. It would be advisable to put him on mash diet for a few days. Examine his droppings closely for sand, and if present give him a pint of raw linseed oil, which must be carefully administered, and keep him on soft food until his dung is free from sand.

"G. S.," Loxton, has mare with an irritation of the hind part of the legs. The animal has rubbed nearly all the hair off her legs.

Reply—This irritation is probably parasitic, and the hair will soon grow again upon removal of the cause of the trouble. I advise you first to wash the legs in warm water and soap. When dry apply a dressing of sulphur ointment, made by mixing one part of sulphur with four of lard or vaseline. Rub this in thoroughly. Three applications at weekly intervals should effect a cure.

"J. F. W.," Macclesfield, reports mare with a swelling about 14in. long in the region of the udder on the near side.

Reply—The swelling is probably due to an injury. A rupture is distinguished by the fact that the swelling is soft, elastic, and may be made to disappear on the application of pressure. In this case the dimensions of the swelling do not indicate a rupture. If it is warm and painful you can apply warm foments. Put her on soft food (mashes and green stuff). See that she gets a little gentle exercise, and give cooling medicine, such as Epsom salts 1oz., saltpetre 1 teaspoonful, once daily in drinking water or in the feed. If the swelling does not disperse in a few days, write again stating length of time present and character of swelling (whether hot, painful, or doughy on pressure).

"J. P.," Clarendon, has five-year-old horse with a small cauliflower-like growth about the size of a pea on the inside of the eye.

Reply—These growths in the eye are very common in horses, and most frequently affect the "haw." The only treatment is surgical removal, and in the early stages this is quite a simple matter. You should have the operation performed by a qualified veterinary surgeon when it is convenient to bring the horse to Adelaide. There is no immediate necessity for the operation, but you should have it done before it grows any larger. Applications of caustic substances for the removal of these growths are usually ineffective, and only serve to irritate the eye. Use a little boracic lotion in the meantime for the purpose of cleansing the part of discharge.

"W. G.," Keith, has brown gelding, free worker, very poor appetite. Chews couplings, and wanders about the paddocks; also young colt with scalded shoulder that has developed into a large soft swelling.

Reply—(1) Brown gelding—Obtain 1lb. of Fowler's solution of arsenic. Give him one tablespoonful twice daily in the feed. (2) Young colt—Use the following lotion:—Sulphate of zinc, 1oz.; acetate of lead, 1oz.; cold water, 1qt.;

mix. Shake well before using. Apply several times daily to the swelling by means of a swab.

Hon. Secretary Agricultural Bureau, Winkie, reports dog, loosing hair and continually scratching himself.

Reply—The dog appears to be affected with one of the parasitic skin diseases, such as mange. I recommend the following dressing:—Sulphur, 4oz.; oil of tar, ½oz.; liquid paraffin (white vaseline oil), 10ozs.; mix. Clip the hair off. Apply the dressing to the parts affected. Wash off in a week, and when dry reapply.

Hon. Secretary Collie Agricultural Bureau asks for suitable ration for a pony stallion.

Reply—He will require about 10lbs. hay chaff, 5lbs. oats, and 3lbs. bran daily (more or less according to size). For a change give him a little boiled barley or linseed occasionally and a little green stuff when procurable. This should be divided into four feeds, but you can substitute hay for the night feed. Supply a little salt daily, either in a lick or as rocksalt. Water before feeding. Regular feeding and exercise is of great importance. Avoid sudden changes in the diet.

"H. T. H.," Willowie, reports draught horse lame in off hind leg.

Reply—The apparent pain and holding up of the leg suggest foot lameness, and I advise you to make a close inspection of this part. Examine both the wall, coronet, and under surface of the foot for heat and tenderness. The examination of the foot will be facilitated if you put a hot bran poultice on over night and thoroughly clean out the foot the following morning. The presence of pus in this region is extremely painful, and if present sufficient horn must be cut away to provide for its exit. The foot must afterwards be kept clean and the wound syringed out with a disinfectant lotion. If you desire further information write again after you have examined the foot.

"J. M. W.," Hynam, has mare with loss of appetite, paleness of lips, and swelling under belly and legs.

Reply—The symptoms are those of general debility. I advise you to give her the following medicine:—Tincture of nux vomica, 4ozs.; aromatic spirits of ammonia, 4ozs.; mix. Give two tablespoonfuls twice daily in a pint of cold water with half a cupful of treacle. Try and get her to feed by offering small quantities of any foodstuff she is fond of at frequent intervals. If she will take mash she should receive sufficient to keep her bowels slightly relaxed.

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DEPARTMENTAL DOINGS.

During the month of July the Director of Agriculture (Professor A. J. Perkins) visited Georgetown and Laura, at which centres he addressed the local Branches of the Agricultural Bureau on "Herd Testing"; the Government Experimental Farm at Veitch; and the Experimental Orchard at Berri, for the purpose of inquiring into drainage matters.

Dairying.

The Assistant Dairy Expert (Mr. H. J. Apps), at Hamley Bridge, Kadina, Arthurton, Minlaton, and Long Flat, visited factories and dairies, and addressed a meeting of the Pompoota Branch of the Agricultural Bureau, and the high school at Murray Bridge.

Horticulture.

The Horticultural Instructor (Mr. Geo. Quinn) visited Glossop (at which centre he gave a demonstration in budding and grafting vines and trees, and a lecture on the packing and grading of fruit), Clarence Park, Inglewood (where he gave a pruning demonstration under the auspices of the local Branch of the Fruitgrowers' Association), and the Government Experimental Orchard, Berri, in connection with the drainage of a salt patch in the orchard.

Mr. C. H. Beaumont (Orchard Instructor for the Southern District) addressed Branches of the Agricultural Bureau at Strathalbyn and Murray Bridge. Pruning demonstrations were given at Strathalbyn and Gilberts.

Mr. J. B. Harris (Orchard Instructor for the Northern District) attended the annual meeting of the Booleroo Centre Branch of the Agricultural Bureau, and addressed the gathering.

General.

The Secretary of the Advisory Board (Mr. H. J. Finnis) addressed meetings of the Agricultural Bureau at Balhannah, Pata, and Veitch.

Mr. F. C. Richards attended and addressed meetings of the Agricultural Bureau at Winkie, Paruna, Wanbi, Mindarie, and Pompoota.

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SOUTH AUSTRALIAN AGRICULTURE AND ITS REQUIREMENTS FROM SCIENCE.

[By W. J. SPAFFORD, Superintendent of Experimental Work.]

The prosperity of South Australia is almost wholly dependent on its agriculture, and on present appearances, owing to the lack of manufacturing facilities, and the non-discovery of large deposits of metals and their ores, it is likely to remain so for a comparatively long time to come. If this prosperity is to be maintained, it can only be done by advancing our agriculture to the extent of very largely increasing the amount produced from the lands now occupied, and in utilising fairly large areas of land still considered as unsuitable; the aid of scientists of all kinds is required if this is to be carried out at all rapidly.

Agriculture is often spoken of as a science, but it is not so, and can only be correctly described as an art—the practical application of rules or principles—but it has become so very dependent on a great number of sciences in recent years that at present it can almost be described as a practical scientific business. It seems certain that agriculture—the production of plants and animals for the use of man—is the oldest of arts, and until comparatively recently it was practised as an art, the details of which were passed on from generation to generation, and, being traditional, made but very slow progress. Within the past 100 years or so, however, since the energies of scientists were directed to agriculture and the other arts, very rapid progress has been made, and agriculture has passed from a rude empirical art to a highly skilled business. A. D. Hall says:—

> Agriculture is the oldest and most widespread art the world has known; the application of scientific method to it is very much an affair of the day before yesterday.

This certainly appears to be absolutely true of the present civilisation, but, although it is such a short time since scientists took an interest in agricultural practices, the amount of investigational work, collection of data, explanation of reasons for operations, experimental work, interpretations of results, &c., has been immense, and the resulting improvement to the art has been equally vast. Notwithstanding the wonderful work already performed by scientists, and the great progress made, there is much work still to be done, and many explanations and improvements required. On these grounds—the outstanding effects of scientific effort, and the visible needs of scientific activity in the practice of agriculture in South Australia—a brief outline of our agriculture will be given.

BRIEF HISTORY OF SOUTH AUSTRALIAN AGRICULTURE.

Agricultural settlement of any new country will always consist of:—

(1) Discovering the crops suitable for human food which can be grown, and the kinds of domesticated livestock which can be produced.

(2) Finding the crops and livestock which can be raised at a profit.

(3) Then, when production has exceeded the local demand, the crops and livestock which can be grown and exported at a profit must be specialised in.

(4) When agriculture has been put on a profitable basis, maximum profits are looked for from the crops and livestock being handled.

(5) Increasing population demands the opening up of more country, and a closer subdivision of the land being farmed, and so, once profitable agriculture has been attained, the opening up of lands which in the past have been considered unsuitable for agriculture, and increasing production so that the farmed land will support more and more human beings, becomes the care of the people, and the scientists show the way.

Agricultural practices are very largely controlled by environment, and so we cannot blindly follow the experience of any other country, but must solve the local problems on the spot; and in the settlement of some new countries much trouble was experienced in the "early" days in deciding the most suitable form of agriculture to adopt. In South Australia, however, this did not apply to a great extent at first, because the original settlers, being of European birth, were fortunate in that they found, right at the point of settlement, natural conditions somewhat similar to those to which many of them had been accustomed, for in the Mount Lofty Ranges and at the foothills, almost everything agricultural successfully produced in certain parts of Europe, could be grown. This meant that after the land had been sufficiently cleared to admit of cultivation, farming could be undertaken without much variation from the known practices of the settlers' homeland; and so the cereals—wheat, oats, and barley—and the meat-supplying animals—cattle, sheep, and pigs—and horses for draught purposes, were successfully grown and reared from the outset.

The extent of country in close proximity to the capital city at all similar to some of the cultivated parts of Europe, and influenced by a somewhat similar climate, and so responding to like methods of treatment, being very limited, it was soon realised that if the State was to carry a large population, farming must be extended to other areas. Away from the strip of country mentioned, the natural conditions were found to be somewhat different, but agriculturists

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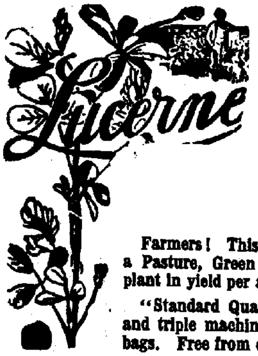

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pushed out into it fairly rapidly, and soon mastered the difficulties encountered, which was mainly done by adaptation of known methods to the changed climatic conditions.

Once away from the hills, the scrub-clearing troubles were not so very great, with the result that much land was quickly rendered fit for the production of crops and livestock, and as the growth of population was fairly slow, the foodstuffs produced soon over reached the requirements of local residents, and operations had to be restricted, if a profit was to be obtained, to the production of those materials which could be exported to countries requiring them, with the production of general agricultural produce kept within the requirements of the local population. Home necessities were easily supplied from a comparatively small area of country; and as the world's markets were good for wheat, wool, meat, fruit, and wines; and as the settled areas had proved quite suitable for their production, the energies of the agriculturists were put into the raising of these articles, and so successfully that farming was soon made a profitable business.

Markets having been established, and profits more or less assured for the producer of these primary products, we are now at the stage of searching for maximum profits from these main lines of production. the profitable handling of other exportable materials, the utilisation of lands so far considered as being of a more or less useless nature for agriculture, the reclaiming of otherwise waste lands, and generally making room for more people on the land.

PRINCIPAL AGRICULTURAL PRODUCTS AT PRESENT.

The principal products on which the agriculture of the State is very largely dependent at present are wheat, wool, meat, fruits, and wine, and, although there are others of which a slight exportable surplus is produced, and again others which will eventually be handled in sufficient quantity to bring revenue into the country from outside, these main lines still demand the fullest consideration.

WHEAT.

Of crops, wheat is by far and away the most important we have yet handled, and at the present time brings more revenue into the State than anything else we export, and as it is the crop which has paved the way for successful agricultural settlement of almost every district we have yet opened up, it is likely to remain well at the head of our primary products for a long time to come, because we still have fairly large areas of land in its natural state.

BRIEF HISTORY OF WHEAT IN SOUTH AUSTRALIA.

When wheatgrowing was first tried in this State, success was achieved at once, although only European varieties were available, but when country with warmer conditions and lower rainfall was brought under wheat crops, it was found that the then known varieties were not altogether suitable. It was soon seen that the liability to attacks of "red rust" (*Puccinia graminis*) and "take-all" (*Ophiobolus graminis*), and the comparative dryness of the spring season, demanded different types of wheat if success was to be attained. Further, most of the soils were found to be deficient in phosphoric acid—a plant food quite essential to growth—and that many of the soils were not extremely fertile, when judged by European standards. Although land was comparatively cheap, labor was expensive, costs of production and marketing fairly high, and because of the above-mentioned disabilities yields were rather low, so that if success was to be ultimately attained many alterations in practice were necessary. The outstanding demands in connection with wheatgrowing were for (1) disease-resistant, drought-resistant wheats; (2) manuring to make up the deficiency of plant foods; (3) methods of cultivation to suit the climatic conditions, and to make the most of the general lowness of fertility of some of the soils; (4) reducing cost of production.

DISEASE AND DROUGHT-RESISTANT WHEATS.

The need of varieties of wheat which would fulfil the requirements of reducing the damage done by "red rust," and which would properly mature grain in districts where hot, dry weather was expected in the spring and early summer seasons, was so urgent all over Australia that scientists, farmers, and other investigators put themselves to the task of evolving new varieties. Considering the smallness of the population in Australia at the time, the amount of work done in this direction was immense, and the results were most satisfactory. Botanists and pathologists did much investigation into the details of the plants and parasites, and with this help plant breeders and plant selectors finally succeeded in overcoming the trouble, to the extent of making wheatgrowing a profitable business. The value of scientific training was clearly demonstrated during this search for suitable types of wheats, for although a large number—possibly hundreds—of wheatgrowers were on the lookout for wheats of this kind, many selecting and caring for any promising variety which came under their notice, and quite a number practising cross-fertilisation of wheats, one trained scientist—the late William Farrer—produced most of the new wheats approaching the ideal. The late Mr. Farrer was a Cambridge graduate, who originally took up wheatbreeding as a hobby, but who joined the New South Wales Department of Agriculture so that he could test out his wheats on the Government Experimental Farms situated in different parts of that State. His knowledge of the laws of breeding meant that he did in a few years what it took others, less well fitted for the job, very long periods to accomplish, and his success, particularly as regards drought resistance, was so great that it has had a world-wide effect.

"Take-all," the other bad parasite, which retarded the development of wheatgrowing, and kept down the profits from this form of farming, played havoc in new districts for a very long time, before even the life history of the fungus was known, and, although this much is now understood—thanks to the work of Mr. D. McAlpine, the Victorian pathologist—and the damage being done is reduced as a consequence, there still remains much investigational work in connection with this disease, some of which is now being exhaustively undertaken by Professor T. G. B. Osborn, of the Adelaide University.

MANURING FOR WHEAT CROPS.

In many districts in this State profitable crops of wheat were secured for the first few years after settlement, but these returns soon became lower and lower, until at last farmers were compelled to give up their holdings, or if they remained on them to eke out the barest of existences. Examination of many soils by chemists disclosed only a comparatively low content of phosphoric acid, and field experiments inaugurated by Professor J. D. Custance, then Principal of Roseworthy Agricultural College, in the making good of this deficiency of phosphoric acid, led to the adoption of applications of calcium phosphate as a fertiliser. The use of superphosphate with the wheat crops again brought most of the wheatgrowing lands into profit.

CULTIVATION FOR WHEAT.

The bulk of the country opened up for agriculture did not admit of wheat being successfully grown by the methods commonly practised in Europe, very largely because the rotation crops usually grown in sequence with wheat did not succeed in the climatic conditions existing, and this was overcome by adopting the old practice of barefallowing the land in preparation for the wheat crops. This barefallowing, *i.e.*, ploughing the soil eight to 10 months before seeding, and keeping it properly cultivated from ploughing until seeding, made profitable wheatgrowing possible in much of our country, particularly where the average annual rainfall is low, mainly because—(*a*) many districts have a very short seeding season, and this practice leads to large areas of land being in readiness to take the seed; (*b*) barefallowing is a very easy way to create a good seed-bed; (*c*) the collection and storage of nitrogen in most soils during the period of the fallow is sufficient for the wheat crops; (*d*) for soils of only fair fertility the exposure to the weathering agents during the period, enables the soil to make good its available plant food from the stores of insoluble mineral matters; (*e*) many weeds were killed, and so

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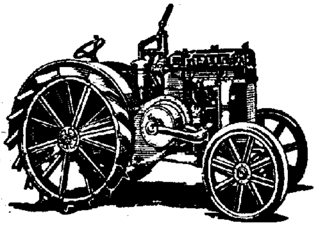

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cleaner crops result. The progress made in the methods of working and handling this system of soil preparation for wheat has been great, but it has been very gradual, the scientist explaining the why and wherefore, and the farmer learning from experience.

For some time after the adoption of bare-fallow, as the recognised method of soil preparation to get profits from the wheat crops, very little else was grown, and most farms were worked on the arrangement of one-half fallow and the remaining half sown to wheat; but even when the best varieties were grown, an adequate amount of phosphatic fertiliser applied, and the most thorough and correct tillage practised, the day soon arrived when yields were found to be getting lower and lower. This difficulty was discovered to be due to too frequent cropping with the one kind of crop, and could only be corrected by the adoption of a rotation of crops, or by resting the land for longer periods between crops than had been usual. So far the trouble has been overcome to some extent with a combination of these two corrective measures—by growing some other crop as well as wheat, and by resting the land, such as with (1) bare fallow, wheat, pasture; or (2) bare fallow, wheat, oats or barley, pasture.

REDUCING COST OF PRODUCTION OF WHEAT CROPS.

Being situated at a considerable distance from the markets of the world demanding wheat, and with the comparatively low yields secured from wheat crops because of the severity of the climate, it was quite essential that the costs of production of the crop should be low if success was to be obtained with wheatgrowing. This need led to the demand for labor-saving appliances, and the engineers of the country have kept abreast of requirements, to the extent of evolving types of machines and implements original to the country, and so far advanced as to keep the cost of producing wheat at a figure below that of most other countries, despite the fact that wages are high. Local inventions of agricultural machinery have been so good that they are exported to other countries, or are copied by other people, and are of such importance that at present they are used in practically all wheatgrowing countries with climatic conditions at all approaching our own.

Another practice tending to keep down costs of production was the discovery that hay made of wheat or oats was almost all-sufficient for farm working horses in this particular climate, and what in many countries would be considered as sacrilege—the feeding to animals of wheat, which is God's gift to man—has been one of the principal practices which have helped to put our wheatgrowing on a profitable basis so soon after the settlement of the land.

PRESENT REQUIREMENTS FROM SCIENCE FOR WHEATGROWING.

It is extremely difficult to forecast what improvements to wheatgrowing operations are likely to have the most beneficial effect, but there are some needed advancements visible at present calling for increased scientific work if progress is to be made with this crop, and in this connection the following suggestions can be safely made:—

CONTROL OF DISEASES.

Fortunately, to the present, not a very great number of diseases have retarded the development of wheatgrowing, but, although few in number, the damage has been, and still is, fairly considerable. "Red rust" (*Puccinia graminis*) is no longer looked upon as likely to drive wheatgrowers out of business, but it still does some damage, and rust-resistant varieties suitable to our special conditions are still required.

"Take-all" (*Ophiobolus graminis*) does considerable damage every year in many districts in the State, and in practically all recently opened up districts where wheat is the main crop it has been the usual experience, ever since South Australia was proclaimed, that for some years after scrub clearing very great damage is done to wheat crops by this parasitic fungus. It is of the utmost importance that much work be done with this disease, and every effort made to find a means of control.

"Smuts" (*Tilletia, Urocystis, Ustilago*), if left to themselves, detrimentally affect the crop, to the extent of leading to total failures in bad cases, but they are fairly well understood, and the main requirements are cheaper and simpler methods of control.

TILLAGE OPERATIONS.

The main noticeable improvements in the past have been brought about by farmers themselves, and, as a consequence, have taken a long while to eventuate. A close study of soils by chemists and bacteriologists, with explanations of the work done by the various operations, and with suggestions of altered methods, would hasten on the progress to be made in the future.

VARIETIES.

So much work has been done with the breeding and selection of wheats that we have almost evolved a type purely Australian, but the need for more effort in these directions will never be overcome, and the scope at present is quite unlimited. Any slight improvement in grain yielding power will mean much to any district where it holds good, particularly if it applies to those conditions where profits are low.

MANURING.

In most of our wheatgrowing areas the only fertiliser used is superphosphate, and at present this fills the bill, but it is quite inevitable that in the future other additions to the soil must be made, and a close study of the soils by chemists and agriculturists will show the way when a change is necessary.

ROTATIONS OF CROPS.

In our very short history we have already found that better results are obtained from any crop, if it be grown in regular rotation with a number of other kinds, rather than if it be the only one grown on a given piece of land, and some work has already been done in this connection; but the finding of crops to profitably grow in all those districts where wheat is now produced, and then deciding the correct manner to grow these in rotation with wheat, the latter to remain as the main crop, still exists as an urgent work to be done, if crop returns are to be maintained and increased. In most districts which have been farmed for some time, say, 40 years, a short-course rotation is practised by many farmers, but the need in most places is the discovery of crops which can be profitably grown in the special conditions obtaining. Failing this, many parts of the country now occupied will never carry large agricultural populations.

LABOR-SAVING APPLIANCES.

Engineers and agricultural implement makers have done wonderful work in promoting the profitable growth of wheat with the minimum of manual labor, and it seems reasonable to expect that they will continue to keep well abreast of other improvements in agriculture. The demands of the moment are a reduction in draught of the present machines and implements, and possibly the creation of new types of tillage implements. In other countries motor tractors are replacing animals for draught purposes; but in this country, where horses can be reared and maintaind at so low a cost, a very great reduction in the cost of running these machines will be necessary before they will appreciably affect our wheatgrowing operations.

BRIEF HISTORY OF WOOL IN SOUTH AUSTRALIA.

The wool industry of the State was marked by a rapid and almost uninterrupted progress for about the first 50 years of its history, then by the numbers of sheep remaining almost stationary, while the amount of wool taken per sheep gradually, and more or less regularly, increased. The early settlers quickly realised that the country was admirably suited to the carrying of sheep, and this branch of production went ahead by leaps and bounds. The first ships sailing for

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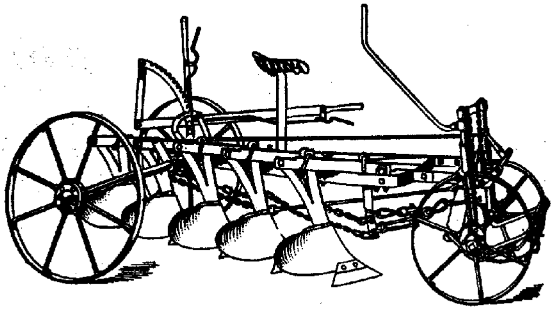

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the province brought Leicester and South Down sheep from England, and Merinos from Saxony and South Africa, and, during 1836, 70 sheep were brought in from Tasmania, and within two years from the proclamation of South Australia, with the natural increase and with further importations from Tasmania, New South Wales, and South Africa, the flocks totalled 28,000 animals. This number rapidly increased, so that in another three years the South Australian Company owned 20,000 sheep, and several private individuals possessed flocks of 10,000 sheep each, and in a little over 50 years the total of the sheep of the State reached 7,250,000.

Wool was first exported from South Australia in 1837, when four bales were sent to London for sale, and the yearly production has since reached over 60,000,000lbs., and in one season about 58,000,000lbs. were shipped overseas.

New South Wales had paved the way for markets for wool, had learnt how to handle sheep under Australian conditions, and had found the Merino to be the best breed for the country, which experience was invaluable to stockowners when this State was started; but the natural advantages found here were so well suited to the Merino breed that the progress made was remarkable.

During the expansion of the wool-producing industry but little trouble was experienced with the animals themselves, as most of the country occupied was in no way unhealthy for livestock, and as it was early realised that the severity of the climate of much of the sheep country called for a special type of sheep, studmasters laid themselves out to evolve this type, and succeeded so well that there is a very big demand for the South Australian Merino sheep for most arid countries in the world. This result was brought about by strictly scientific breeding, coupled with the fact that the law of the survival of the fittest held full sway, because practically no hand-feeding or pampering in any way has been practised by sheepbreeders. The type of sheep having been fixed, breeders have put most of their energies into the improvement of both quantity and quality of the wool produced, and a very marked advance has been made in this direction, without any loss of strength, hardiness, or constitution of the sheep.

The main factor limiting expansion of the sheep flocks has been a shortage of water, and, although much has been done in conserving water, it is still one of the main limiting factors.

The natural conditions have been so suitable to the production of sheep and wool that very little outside aid has been so far necessary to keep the industry a profitable one, but woolclassing, machine-shearing, improved wool-handling appliances, and insect control have certainly helped in this direction.

CLASSING THE WOOL.

In the early days of the State the wool was shipped to Europe and sold there, but about 1860 woolbuyers commenced purchasing in Australia, and at the present time about 90 per cent. of the total wool produced is sold locally. The buyers were sent here to secure the types of wool suited to the special requirements of their firms, and to reduce to a minimum the quantity of unsuitable types purchased, which of necessity had to be resold in the country of the purchaser, after the required kinds were removed from the mixtures of types. This led to the proper classing of the wool, before it was submitted for sale, into the main types required by manufacturers of woollen goods, and simplified the selling very considerably. It not only had the effect of directly increasing the profits from woolgrowing, but led to a much better understanding of wool generally, and the types of wool required in the world's markets, and breeders used this knowledge to the good of the industry.

CHEAPENING THE HANDLING OF WOOL.

The introduction of machine-shearing, improved bales, and baling presses have reduced the cost of handling the product, and so, of course, increased the profits.

INSECT CONTROL.

The main troubles sheepfarmers have had to contend with have been parasitic insects, but, taking the sheep-carrying parts of the State as a whole, there have been to date comparatively small losses incurred on this score. "Sheep tick" (*Malophagus ovinus*) and "sheep lice" (*Trichodectes spherocephalus*) have led to unthriftiness and some losses, but the introduction and use of poisonous dips have kept these insects well in check. The part of the State where "sheep fluke" (*Fasciola hepatica*) does damage is comparatively small, and as the country is being gradually drained this trouble will become less and less. During the last few years sheepowners have been much troubled with the blowfly pest, and the losses of sheep in many cases have been very high. Scientists have done much work in attempting to control this scourge, and although many methods of combating the trouble have been tried, but few are successful in practice, and these are comparatively expensive.

OTHER PESTS.

Besides the insects which lower the returns from wool, there has in the past been some little trouble from "foot-rot" in the wetter parts of the State, but this is being gradually overcome; and along the coastline and in a few other isolated places losses and general unthriftiness have been common with the sheep, caused by a trouble generally known as "coasty," but which is now being investigated, and for which many explanations have been given.

Present Requirements from Science for Wool.

The outstanding need for scientific effort to keep up our production of wool, and to allow of some progress to be made, is, at present, the eradication, or a cheap method of control, of the blowfly pest. Much work is being done, but the damage resulting from live sheep being struck by blowflies is enormous, and is spreading very rapidly over most parts of the sheep-carrying parts of Australia, and has opened up an extensive field of work for scientists.

Water conservation calls for work by engineers in improvements of methods, but this is hardly as necessary as is the education of sheep-farmers in the methods known at present, and in the need of extending operations in this direction.

Increased numbers of sheep could be carried in many parts of the State if we could utilise the excessively saline waters found underground.

To increase the production of the present holdings, much work is needed in discovering fodder plants suitable to these semi-arid conditions, how to improve present pastures, and generally to collect, select, and improve our indigenous drought-resistant fodder plants.

There is still much work to be done with wool itself, and scientists can do a great amount of good by a thorough study of it.

Most of our wool is shipped with all the dirt, grease, and other impurities as it comes from the sheep's back; methods of scouring, with utilisation of all by-products, need much inquiry.

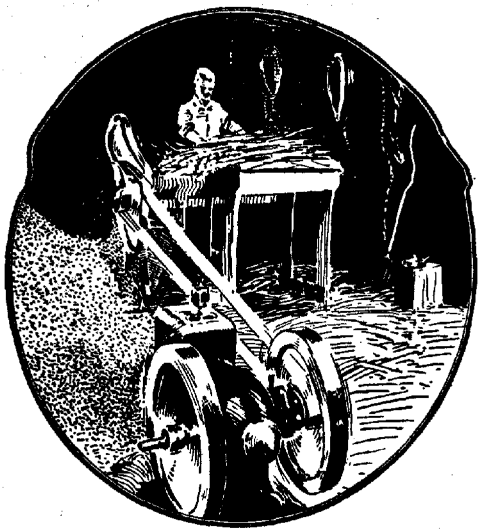
Methods of control of the rabbit pest need improvement, for at present costs the sheep country of low-grazing capacity often does not warrant the expenditure.

On small holdings foxes very considerably reduce the returns secured from sheep, and methods of eradication are needed.

MEAT AND KINDRED PRODUCTS.

Besides wool, our exports of animal products have reached quite a considerable figure, having exceeded a value of £1,000,000 in one year. Much of this material consists of the by-products of the animals slaughtered for home consumption, such as skins, hides, and fats, and the great bulk of the remainder is composed of the flesh of sheep and lambs.

As for sheep, the great bulk of the State quickly proved its adaptability to other forms of domesticated farm livestock, and the numbers of cattle and pigs increased very rapidly until an over supply of meat



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was produced. When this happened, the regular increase in numbers which had taken place up to that time immediately checked, and of the three classes of meat-producing livestock, sheep are the only ones that have shown a great increase, both cattle and pigs doing little more than keep abreast of local demands. The introduction of freezing chambers on overseas boats quickly overcame the over supply of meat animals, but, despite this, little has been done other than with sheep, and our exports of beef and pork are very small.

Although science showed us the way out of our difficulties of an over-supply, we have made little use of it to date.

REQUIREMENTS FROM SCIENCE FOR MEAT.

Until we utilise to its full what we have already learned from science, as to the breeding of suitable types, feeding to best advantage, curing and delivering to the consumers in good order, it seems vain to be looking further afield, but it is inevitable that we must increase our exports of meat and kindred products, and the results of work done now will be useful when required.

Much more must be known about breeding and feeding the different types of animals which we already have proved as being suitable to our special conditions.

Quite a number of breeds of all the kinds of meat-producing animals have not yet been brought into the State. All useful kinds that give promise of suiting the natural conditions prevailing here should be introduced, acclimatised, and compared with existing types.

Refrigeration can still be improved, and methods of curing meat require close study.

FRUITS.

Although the progress made by the fruit-growing industry was not nearly so rapid as was the case with wheat and wool, still there has been a steady increase, and when cool storage was provided on overseas boats, allowing the export of fresh fruits, marked improvement was made, and a further rapid move forward followed the opening up of land for orchard growing with irrigation, on the River Murray.

Besides cool storage for shipping purposes, and for holding fruits until a time of shortage was reached, growers learnt to dry their fruits, and this practice also led to a marked increase in production.

In various parts of the State there exist comparatively large areas of suitable land not yet growing fruit in climatic conditions where the temperature in winter sometimes falls below 32deg. F., and in summer rarely reaches 100deg. F. in the shade, and with an average annual rainfal of from 20in. to 40in.; and in these places practically all of the fruits of temperate climates can be and are being grown successfully, without irrigation of any kind.

The progress of this industry was fairly regular for quite a long time, but was not much greater than the growth of local requirements, and so the troubles experienced were dealt with as they occurred, with the result that there was no great setback to this advance until an over-supply was reached.

The country where River Murray water can be used for irrigation is ideally suited to the growth of some types of fruits, and a better climate for sun drying the crops could hardly be found, and as fairly large areas of this type of country are still available, and a fair amount of river water is still unused, the advance in production of late years is likely to be maintained for some time to come.

For this particular industry the South Australian Government has been watchful, and for some time a horticultural department has been in existence, and has been fairly well staffed, to be able to keep somewhere nearly abreast of the growth of fruit production, which cannot be said for any other branch of the agriculture of the country. The Horticultural Department has kept the fruitgrower in close touch with the needs of his business, such as kinds and varieties of fruits to grow, cultivation, insect and fungus pest control, pruning, storing, marketing, &c., &c., and as a consequence the setbacks suffered by fruitgrowers have been small, other than the need of markets.

Requirements from Science for Fruits.

There are many lines of work in connection with the production and marketing of fruits awaiting scientists of different kinds, such as:—

(*a*) The introduction, acclimatisation, and adapting to our conditions of varieties of the proved fruits and of kinds not yet tried in the country.

(*b*) Improved methods of drying, preserving, and storing fruits. Sun-drying fruits is an ideal way of preserving those that can be dried, if they are to be used for food comparatively soon after being cured; but if kept for a long time the dried product is very liable to attacks of insects. Some improved method of dehydrating, or treatment of some kind, is necessary to overcome this fault. The high price of sugar—the present preserving agent—must be reduced, or some other method of preserving found. Anything that will enable growers to cheaply store fresh fruit for a longer time than is now possible will considerably help the industry.

(*c*) Improved methods of irrigation. This method of fruitgrowing offers almost unlimited scope for scientific workers, particularly on our one large waterway—River Murray; but also in most other places where water is available.

(*d*) Manuring of the trees.

(*e*) Pruning.

(*f*) Control of pests. This will always demand much scientific work, because, despite the greatest of care, known diseases and pests make their appearance, and others adapt themselves to attacking fruit trees.

(*g*) Creation of new varieties.

(*h*) Cultivation, &c., &c.

WINES.

The similarity of much of the State to the vinegrowing parts of Europe impressed itself upon early settlers, and consequently a large assortment of the best varieties of grapes was soon introduced, and quickly showed that the climate was almost ideally suited to the growth of the vine, and to the production of wines. The quantity of wine produced soon over-reached the local requirements, and it became necessary to export the surplus, which was done by shipping it to Europe—mainly England—where its ready sale was soon brought about, because its quality was fairly good, and its price comparatively low. Brandy of fairly good quality having been manufactured in quantity in the State also helped to overcome the excess of wine production, and as this product was easily exportable and readily sold, its manufacture rapidly increased, and is still profitable.

The opening up of the export trade in wines and spirits gave new life to the vinegrowing industry, and much and rapid progress has been made since that time, and even though the fear of "prohibition" has been with us in this State for the past few years, it has only retarded, but not wholly prevented, the progress.

The vinegrowing and winemaking industry is a very old one in other countries, and it has long been recognised that certain varieties of grapes make certain types of wine, and as the wine trade demands fixed types of wines, anyone coming into this trade must produce the kinds required. This meant that the starting of the industry depended on the adapting the known varieties of wine grapes to the existing conditions, and did not call for the creation of new varieties, and as this proved a comparatively easy operation a good start was made with this industry right from its inception. The great trouble experienced in other countries with diseases and pests of the vine has not existed with us, and for some years now much care has been shown in the preventing the appearance of the worst of them, particularly in the keeping out of the dreaded insect pest, phylloxera.

Winemaking being a highly technical operation, demanding much skill and experience, it is only natural in a new country that much poor wine was made in the early days while the necessary experience was being gained, but the men who took on this branch of production soon learned sufficient to enable them to make a saleable article, and

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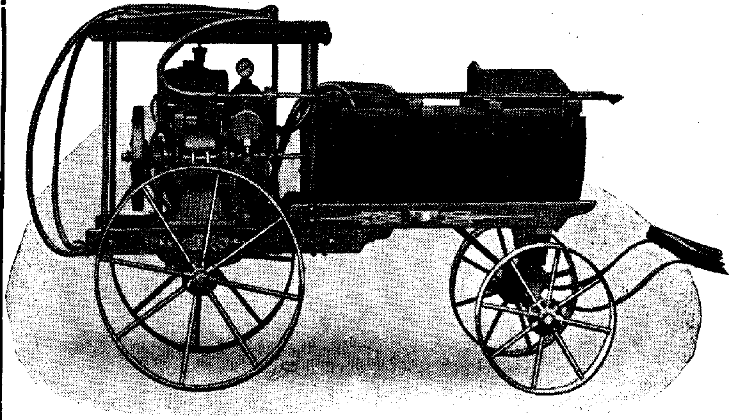

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Requirements from Science for Wine.

The types of wines required in the trade having been fixed for a very long time, and it being only possible to make these types from certain varieties of grapes, no work is called for in the creation of new varieties, but there is room for much improvement in the yields of grapes from these varieties, such as in connection with pruning, cultivation, and manuring, and the study of soils to show suitability of varieties. A full understanding of diseases and pests of vines, including methods of control, is absolutely essential, and calls for some work. As high quality will do more towards stabilising the wine industry than quantity or anything else, there is plenty of work ahead of bacteriologists, chemists, and other scientific workers in obtaining full knowledge of all details of manufacture as they operate under our special conditions.

OTHER PRODUCTS OF IMPORTANCE.

Although the branches of agriculture already dealt with cover our main lines of production of exportable products, there are quite a number of others of the greatest of importance to our own population, some of which are very close to the stage when they must be exported, or else the rate of their expansion must be reduced to keep level with the increase of local population. As some of these industries are much in need of the help of scientists, they will be briefly dealt with.

DAIRYING.

The production of milk and its products is of the greatest of importance to civilised people of the present time, and the demand for these products is great from most places in the world. To date, dairying has done little more than keep pace with the growth of population in South Australia, but as much of the country is well suited to this class of agriculture, and as the world's markets are eager to secure these products, everything possible should be done to encourage and extend the industry. Besides the introduction and testing of breeds, feeding and management of the animals, and increasing the quantity of milk produced, the outstanding needs for a country situated so far from the main markets of the world appear to be improved methods of curing, storing, and transporting of the products.

Crops under Irrigation.

Quite a considerable area of land in South Australia is now producing crops of a great many kinds, with the aid of irrigation, and the help that science can give to this branch of the agriculture of the State is enormous, because it is only in its infancy, and some phases of it are but little understood in these special conditions. In this direction full knowledge is required of:—

Soils and Subsoils—Particularly as regards physical properties.

Water—As to quality and quantity for different soils and crops.

Drainage—As to depth, extent per unit of area, &c.

Grading—As to extent necessary for different crops.

Injurious Salts—In solids and water, and as to liability to accumulate in spots.

Application of Water—As to best method for the climate, whether underground or on surface.

Crops—For different conditions.

Pumps.

Cultivation.

Manuring, &c., &c.

VEGETABLES.

The production of vegetables has only advanced with the growth of population; but in the hills in the near neighborhood of Adelaide, and certainly on the reclaimed swamp lands of the River Murray, this industry could be much increased. For this increase to be worth while it would naturally mean the exporting of the surplus, and this could only be done by curing the produce in some way, and so methods of drying, canning, and preserving generally, await investigation. At present the greatest need for increased research is in connection with the control of insect and fungus pests, and in manuring.

CEREALS OTHER THAN WHEAT.

Considerable areas of both barley and oats are grown in the State at the present time, but it is only comparatively recently that the production of these cereals has exceeded the Australian demand; but we have now reached the stage when we should be securing overseas markets for the grain. Both crops are of the utmost importance to us as an agricultural country, and we have much to learn in connection with their profitable growth. So little is known of these crops that practically all farmers know every kind of the six-rowed type of barley as "Cape," although there are hundreds of varieties belonging to this type, grown in other countries, and if an oat crop is spoken of it generally refers to "Algerian" oats. This want of knowledge of varieties must be overcome for both cereals before we can hope to do much with them, and as so little is known about the crops, the whole question of the best way to grow them has yet to be studied. Judged by the experience of other semi-arid countries, barley of the six-rowed type is likely to play a very important part in our agriculture in the future, for we have much low rainfall country settled, and now growing wheat, which could very possibly be farmed to better advantage with barley as the principal crop. We have learnt to handle the two-rowed type of barley ("English" or "malting" barley) fairly well, and our main need in this direction at present is a fixed market to which the surplus can be regularly shipped. Oats are likely to be of less importance from an exporting point of view, as most of our agricultural country is by no means ideal for the production of this crop, and the increase in the quantity grown will, for a time at all events, only need to keep pace with the increasing numbers of farm livestock.

AFFORESTATION.

Sufficient work has been done in the State to demonstrate clearly the fact that we have comparatively large areas of land, situated in suitable climatic conditions, to grow first-class commercial timbers, and much of this country is not ideally suitable to other forms of agriculture. The lack of extensive tracts of indigenous timber trees, forces us to import comparatively large quantities of timber, a very big proportion of which could be replaced by locally grown timbers, and we hope it will be some day. Although scientific work is being done in this direction, there is plenty of room for all interested to direct their energies towards this goal.

LUCERNE.

Of recent years, fairly considerable areas have been seeded to lucerne crops, both where water is available for artificial irrigation and under the natural conditions, and, although profits have been secured, there is much to learn in connection with the handling of the crop. One of the outstanding needs for investigational work is in the eradication or control of the "lucerne flea" (*Smynthurus viridis*), which of late years has done much damage, and in some districts almost preventing the profitable growth of the crop.

SOME OTHER AGRICULTURAL CROPS.

Although the natural conditions existing in different parts of the State permit of the growth and proper development of practically all plants and all forms of domesticated livestock now successfully raised in temperate climates, our existing economic conditions do not admit of the profitable handling of many of them, but there are a few which on present appearances could be produced in South Australia with marked benefit to the country. The most important of these at present appear to be tobacco and sugar.

TOBACCO.

The neighboring State of Victoria is producing quite a lot of tobacco of first-class quality, with big profits for the grower and much benefit to the State. Experts' opinions of parts of South Australia are wholly favorable to the growth of the same types of tobacco (plug and cigarette), and as the imports of these tobaccoes are very considerable, the sooner this crop is seriously tried the better. Sufficient work has been done in this direction to show that the visiting experts were correct in their assumption, but it yet remains to put the crop on a commercial basis.

SUGAR.

In such a really wonderful fruit-producing country as this State is, sugar for preservative purposes is of the utmost importance, particularly as we are so far from the main markets of the world; but, at the same time, to be able to compete in those markets it is essential that not only should there be plenty of sugar available, but it must be at a reasonable cost. Unfortunately we have to use expensive cane sugar, and the only way to overcome this disadvantage appears to be the production of sugar from the sugar beet. Experiments have shown that sugar beet can be successfully grown in many places in the State, some of which are of sufficient area to warrant the erection of a sugar manufacturing establishment, and it seems that it would certainly benefit the State as a whole if this industry was started.

OTHER AGRICULTURAL REQUIREMENTS.

Besides the principal lines of crops and livestock, there are many things affecting the agriculture of the country which are demanding scientific investigation of one kind and another, and at present possibly the most important of these are the reclamation of waste lands and a thorough knowledge of our soils.

LAND RECLAMATION.

In the past the land which could be easily reclaimed for agricultural purposes was rendered fit by the operations of private individuals, but there is now a very considerable extent of country, more or less waste in its present condition, which can only be reclaimed by expensive works undertaken by Government, but which is of high agricultural value when completed. This work calls for much effort from science generally, but mainly, of course, from engineers.

SOIL SURVEY.

Other countries, much older so far as agricultural practices go, have secured great advantage from a thorough knowledge of their soils, and the United States of America is even going to the expense of having a complete survey made of all of the soils of its agricultural areas. If this procedure is of advantage to older countries, how much more so is it necessary in a country with much unallotted land still to be settled?

GENERAL.

A glance at the export statistics for South Australia clearly shows that at present the prosperity of the State rests almost wholly on its agriculture, and it certainly appears that it is likely to remain so for a comparatively long time to come, and anything done towards the improvement of our agriculture will increase this prosperity. In the past, practically all scientific work in the agricultural world of this State has been done at Government's expense, but the time is ripe for individual effort in this direction. Persons in a sufficiently sound financial position to take up scientific investigations as their life's work, and only seeking the thanks of their fellowmen for anything they may achieve, could not find a line of scientific work so interesting and absorbing as agriculture. Individuals who have succeeded in amassing money in the commercial or professional fields of the State, could show gratitude to their country by not losing sight of its greatest needs, and can help on its agriculture by personal work, or by money grants. No more attractive hobby is available to the person with sufficient training than plant breeding and animal breeding, or for that matter the introduction and acclimatisation of plants and animals, and the requirements of the country in these directions are enormous. Surely in a "new" country such as is this, dependent on its agriculture, and demanding much agricultural investigation if its prosperity is to be maintained, it is hardly right and proper that, when announcing the decease of a more or less wealthy person, the main commendation the press can give him is "he was a great worker for some religious organisation," when so much good could have been done for the advancement of the State.

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EXPERIMENTAL FARM HARVEST REPORTS.

VEITCH'S WELL EXPERIMENTAL FARM.

[By L. SMITH, Manager.]

This farm is situated in the hundred of Allen, 158 miles from Adelaide, on the Loxton Railway. It contains about 3,800 acres of land, the bulk of which is sandy, the remainder running to shallow light-loam soils overlying hard limestone rock—conditions similar to thousands of acres of surrounding country.

THE SEASON 1921.

The returns from the cereal crops as set out below show the season to be an average one. The total rain which fell reached 12.36in., and of this 8.24in. could be included as useful rain to the growing crop. The bulk of the seed was put in dry during April and May, and came away well after the first rains. The season provided a noteworthy instance of how considerably one dry period during September and October will affect returns. Up to the second week in October crops generally were equal to those of 1920, but an absence of rain at the time the crops were ripening resulted in the ultimate returns being about 50 per cent. below the yields anticipated earlier in the year. The distribution of the rainfall for the year, together with that for each year since 1915, is set out in the table below:—

Rainfall Distribution—Veitch's Well, 1909-1921.

	Means, 1909-1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	Means, 1909-1921.
	In.	In.	In.	In.	In.	In.	In.	In.	In.
January	0.33	0.48	0.18	0.45	0.07	0.20	0.10	1.61	0.40
February	1.18	—	0.03	2.60	0.23	5.49	—	0.97	1.27
March	1.90	—	0.10	0.78	0.49	0.36	0.33	1.24	1.07
April	0.25	0.51	0.20	0.24	1.00	0.26	0.33	0.06	0.32
May	1.48	1.33	0.43	1.15	1.31	1.88	1.45	2.19	1.38
June	1.62	1.91	1.97	1.01	1.08	0.37	1.29	0.78	1.40
July	1.03	0.63	2.43	1.14	1.39	0.29	0.79	0.91	1.06
August	0.90	1.67	4.01	1.91	2.36	0.53	2.19	1.28	1.49
September	1.82	1.99	2.57	2.01	0.22	0.76	3.10	1.54	1.78
October	0.68	0.56	1.64	2.38	0.98	0.45	3.66	0.45	1.09
November	1.05	0.19	2.04	1.72	0.07	0.62	0.95	1.03	1.00
December	0.70	0.56	1.09	1.21	—	2.03	1.31	0.30	0.83
Total	13.00	9.83	16.69	16.60	9.20	13.24	15.50	12.36	13.09
"Useful" rain (April-November)	8.86	8.79	15.29	11.56	8.41	5.16	13.76	8.24	9.52

The distribution of the "useful" rainfall is set out in the next table. The amount gauged is shown to be a little below the average, although fair seeding and winter rains fell.

	1921. In.	Means, 1909-1921. In.
Seeding rains (April-May)	2.25	1.70
Winter rains (June-July)	1.69	2.46
Spring rains (August-October)	3.27	4.36
Early summer rains (November)	1.03	1.00
Total "Useful" rainfall	8.24	9.52

CROPS.

In the fields, cereals were the only crops grown. In small blocks near the homestead, lucerne and Wimmera rye grass gave good feed. For a block of early greenfeed a mixture of rye, barley, and oats proved satisfactory.

Hay Crops.—A block containing 32½ acres of Algerian oats and 28½ acres of Baroota Wonder wheat in Field No. 3 was the only area sown solely for hay. Four and a half acres of headlands gave a total hay area of 65.59 acres, yielding 90 tons of hay, which equals 1 ton 7cwts. 49lbs. per acre.

The following table sets out hay crops harvested at Veitch since 1910:—

Hay Returns—Veitch's Well, 1910-1921.

Year.	Total Rainfall.	"Useful" Rainfall.	Area.	Total Yield.			Yield per Acre.		
	In.	In.	Acres.	T.	C.	L.	T.	C.	L.
1910	16.19	10.15	82.00	82	0	0	1	0	0
1911	13.36	7.28	121.50	74	18	0	0	12	37
1912	11.57	10.19	218.00	109	0	0	0	10	0
1913	14.95	8.27	140.00	70	0	0	0	10	0
1914	6.24	3.66	100.00	Total failure.					
1915	9.83	8.79	158.00	180	0	0	1	2	88
1916	16.69	15.29	127.08	243	0	0	1	18	27
1917	16.60	11.56	69.01	110	0	0	1	11	98
1918	9.20	8.41	78.89	93	16	0	1	3	87
1919	13.24	5.16	109.88	45	0	0	0	8	21
1920	15.50	13.76	122.21	220	0	0	1	16	0
1921	12.36	8.24	65.59	90	0	0	1	7	49
Means . ..	12.98	9.23	—	—			1	0	6

The season's yield is above the average, and its inclusion in the mean average for the farm brings it up to 1 ton 0cwt. 6lbs. per acre for the 12-year period 1910-1921.

Oat Crops.—All told, 36½ acres of oats were harvested for grain. The oats were in Field No. 3, being drilled in on fallow from April 27th to 30th, and at the rate of 40lbs. of seed to the acre, with 1cwt. superphosphate. This Field No. 3 was fallowed August 9th to 25th, cultivated September 26th to 29th, and again March 4th to 19th; finally harrowed after seeding.

The results secured from these varieties are as under:—

Oat Variety Yields—Veitch's Well, 1921.

Variety.	Field Grown.	Area.	Total Yield.		Yield per Acre.	
	No.	Acres.	Bush.	lbs.	Bush.	lbs.
Algerian	3	15.13	308	30	20	16
Scotch Grey	3	21.17	315	0	14	35
Farm average ..	—	36.30	623	30	17	7

Of the oat varieties tried on this farm up to date Algerian and Scotch Grey have proved the most suitable for our conditions, both varieties standing well and giving fair returns under reasonable conditions. Sunrise oats have given a better length of straw than any other variety, but have proved a very poor grain yielder.

The inclusion of the season's return in the mean oat yield of the farm reduces it from 19bush. 7lbs. per acre for five years to 18bush. 33lbs. per acre for six years 1916-1921, as set out below:—

Oat Returns—Veitch's Well, 1916-1921.

Year.	Total Rainfall.	"Useful" Rainfall.	Area.	Total Yield.		Yield per Acre.	
	In.	In.	Acres.	Bush.	lbs.	Bush.	lbs.
1916	16.69	15.29	12.39	478	37	38	26
1917	16.60	11.56	50.19	1,396	35	27	33
1918	9.20	8.41	40.43	253	24	6	11
1919	13.24	5.16	39.17	379	12	9	27
1920	15.50	13.76	157.08	2,110	37	13	18
1921	12.36	8.24	36.30	623	30	17	7
Means .	13.93	10.40	—	—		18	33

Barley Crops.—The barley crops harvested for grain were grown on new ground and part on fallow. The fallowed area was 28.42 acres in the experimental plot and 6.28 acres in Field No. 6.

The new land under barley in Field No. 4A was skim ploughed after being burnt in March, and drilled with 1cwt. of superphosphate and 1bush. of seed at the end of May, and harrowed after drilling.

The yield obtained, together with the farm average for the year, is detailed in the following table:—

Barley Variety Yields—Veitch's Well, 1921.

Variety.	Area.	Total Yield.		Acre Yield.	
	Acres.	Bush.	lbs.	Bush.	lbs.
Tunis 1	25.87	345	40	13	18
Tunis 4	15.52	136	0	10	25
Tunis 4 (exp.)	28.42	595	38	20	48
Farm average	69.81	1,077	28	15	21

Considering the dry finish, it is to be only expected that new land would show the ill effects. Well-worked fallow yielded 20bush. 48lbs.

The next table gives details of the barley crops grown on this farm since 1915:—

Barley Returns—Veitch's Well, 1915-1921.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush.	Total Yield. lbs.	Yield. per Acre. Bush.	Yield. per Acre. lbs.
1915	9.83	8.79	22.72	248	9	10	46
1916	16.69	15.29	20.10	517	20	25	37
1917	16.60	11.56	44.03	1,104	10	25	4
1918	9.20	8.41	49.68	305	5	6	7
1919	13.24	5.16	83.18	185	46	2	12
1920	15.50	13.76	73.20	2,232	48	30	25
1921	12.36	8.24	69.81	1,077	28	15	21
Means ..	12.98	9.23	—	—		16	28

The mean yield of 16bush. 28lbs. is not a high one for barley, but it is the best yielding cereal we have for bulk feed for pigs, &c., and these returns will be increased as harvesting conditions are improved.

Wheat Crops.—Other than in permanent experimental plots, all wheat crops were grown in Fields Nos. 3, 3A, and 6. Fields No. 3 and No. 6 contained fallow land; No. 3A consisted of new ground and stubble land under crop the previous season. The fallow land was ploughed in July and August, and cultivated in September and again in March, and then seeded in April and May.

The yields obtained from all varieties grown are detailed in the next table:—

Wheat Variety Yields—Veitch's Well, 1921.

Variety.	Field Grown. No.	Area. Acres.	Total Yield. Bush.	Total Yield. lbs.	Acre Yield. Bush.	Acre Yield. lbs.
Gluyas	6	58.81	1,016	0	17	16
Baroota Wonder	3	7.95	116	44	14	41
Triumph	3	6.79	91	9	13	25
Caliph	6	50.80	678	20	13	21
Queen Fan	6	34.94	462	38	13	14
Baroota Wonder	6	32.94	414	35	12	35
Late Gluyas	6	40.98	480	20	11	43
Yandilla King	6	52.98	615	28	11	37
Federation	6	23.84	245	0	10	12
Cumberland	3	9.05	92	17	10	11
King's Red..	6	19.61	195	45	9	58
Fortuno	3	6.27	61	35	9	49
Early Gluyas	3A	19.1	148	16	7	45
Baroota Wonder	3B	65.45	493	50	7	32
Caliph	3A	17.37	131	47	7	35
Le Huguenot	3	2.99	22	18	7	27
Red Russian	3A	25.7	186	18	7	14
King's Red..	3A	34.92	240	22	6	53
Baroota Wonder.	Exp. Plots	28.42	476	1	16	44
Baroota Wonder.	Exp. Plots	4.70	87	35	18	38
Farm average ..	—	553.61	6,256	18	11	18

The yields recorded are slightly above the average. The varieties sown on "new ground" considerably reduced the yield. The two varieties showing to advantage are Gluyas and Baroota Wonder. Triumph, Caliph, and Queen Fan also gave fair returns. The addition of this year's yield of 11bush. 18lbs. brings the mean average yield up to 10bush. 57lbs.

The next table gives details of the wheat crops grown at the farm since 1909:—

Wheat Returns—Veitch's Well, 1909-1921.

Year.	Total Rainfall.	"Useful" Rainfall.	Area.	Total Yield.		Yield per Acre.	
	In.	In.	Acres.	Bush.	lbs.	Bush.	lbs.
1909	14.45	13.04	22.00	396	0	18	0
1910	16.19	10.15	197.50	2,156	0	10	55
1911	13.36	7.28	620.90	5,080	30	8	11
1912	11.57	10.19	569.00	5,544	18	9	45
1913	14.95	8.27	791.40	4,742	28	6	0
1914	6.24	3.66	951.00	325	30	0	21
1915	9.83	8.79	602.11	6,681	51	11	6
1916	16.69	15.29	407.74	7,102	20	17	25
1917	16.60	11.56	469.91	7,156	50	15	14
1918	9.20	8.41	287.89	1,905	28	6	37
1919	13.24	5.16	263.62	1,419	32	5	23
1920	15.50	13.76	287.52	6,384	55	22	12
1921	12.36	8.24	553.61	6,256	18	11	18
Means	13.08	9.54	—	—		10	57

Although the mean average yield of 10bush. 57lbs. per acre is not very high, it is quite satisfactory for these particular conditions, and with well-worked fallow land, clear of stumps, much better returns can be expected.

The behaviour of the majority of varieties of wheats grown on this farm since 1918 is shown in the table below:—

Yields of Varieties of Wheat—Veitch, 1918-1921.

Variety.	1918.		1919.		1920.		1921.		Means, 1918-21.	
	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.
Red Russian	14	45	7	36	27	8	7	14	14	11
Gluyas	9	53	6	44	19	19	14	56	12	43
Yandilla King . . .	10	35	3	18	25	10	11	37	12	40
Baroota Wonder . .	5	30	6	7	26	13	11	23	12	18
Queen Fan	2	54	4	36	26	18	13	14	11	45
Fortune	9	18	9	6	16	56	9	49	11	17
Cumberland	8	29	5	10	18	47	10	11	10	39
Federation	4	9	4	38	23	2	10	12	10	30
Late Gluyas	3	40	2	13	19	43	11	43	9	19
King's Early . . .	5	9	4	34	17	25	7	59	8	47
Caliph	—		7	50	25	28	11	53	—	
Triumph	—		—		14	22	13	25	—	
Farm average .	6	37	5	23	22	12	11	18	11	15
	In.		In.		In.		In.		In.	
Total rainfall . . .	9.20		13.24		15.50		12.36		12.57	
"Useful" rainfall	8.41		5.16		13.76		8.24		8.89	

During the period shown above, 1918-21, Red Russian has proved the best yielder of the wheat varieties grown, with Gluyas, Yandilla King, and Baroota Wonder well up in the list.

Caliph is a variety of wheat expected to do well in the future.

EXPERIMENTAL PLOTS.

A series of permanent experimental plots, on which the various treatments to be given, whether of cultivation or manuring, are to be continued for a number of years on the same blocks of land, has been mapped out for both wheat and barley, and consists of manurial and cultivation tests.

Manurial Plots with Wheat.

The permanent manurial plots with wheat, being worked on the following rotation:—(1) Pasture, (2) bare fallow, (3) wheat—carried their second crops this season, with the following results:—

Permanent Manurial Plots with Wheat—Veitch's Well, 1920-1921.

Plot.	Manuring per Acre.	Yield per Acre. 1920. Bush.	lbs.	1921. Bush.	lbs.	Means, 1920-1921. Bush.	lbs.
1	½cwt. superphospate	28	43	15	47	22	15
2	1cwt. superphosphate	28	19	17	53	23	6
3	2cwts. superphosphate	32	29	19	9	25	49
4	3cwts. superphosphate	31	37	19	18	25	27
5	No manure	24	59	14	33	19	46
6	1cwt. superphosphate, ½cwt. sulphate of potash	28	18	19	47	24	2
7	1cwt. superphosphate, ½cwt. nitrate of soda	26	59	17	47	22	23
8	1cwt., superphosphate, ½cwt. sulphate of potash, ½cwt. nitrate of soda	29	53	18	30	24	11
9	No manure	21	18	15	49	18	33

Cultivation Tests with Wheat.

A series of experimental plots, worked on the following rotation:—(1) Pasture, (2) bare fallow, (3) wheat, and having as their object the testing of the different methods of cultivating bare fallow for the growing of wheat, was commenced in 1920, and the results secured from these plots are set out on next page.

Cultivation Plots with Wheat—Veitch's Well, 1920-1921.

Plot.	Treatment.	Yield per Acre. 1920. Bush.	 lbs.	 1921. Bush.	 lbs.	 Means, 1920-1921. Bush.	 lbs.
	Early Fallow (June-July).						
10	Ploughed 4in. deep and harrowed within a few days. (Cultivated whenever weeds or a crust rendered necessary.)	27	5	17	28	22	16
11	Ploughed 4in. deep and left rough throughout the winter. (Cultivated whenever weeds or a crust rendered necessary.)	28	19	17	8	22	43
12	Ploughed 4in. deep, rolled within a few days, and cultivated or harrowed according to circumstances. (Cultivated or harrowed whenever weeds or a crust rendered necessary)	27	33	13	45	20	39
	Late Fallow (September).						
13	Ploughed 2in. deep, and cultivated whenever weeds or a crust rendered necessary, but not rolled	24	19	14	17	19	18
14	Ploughed 4in. deep, heavily rolled the same day as ploughed, and immediately harrowed. (Cultivated whenever weeds or a crust rendered necessary)	26	33	13	16	19	54

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Manurial Plots with Six-rowed Barley.

On the idea that light-textured soils in low-rainfall conditions should be utilised to produce barley crops rather than wheat crops, as is the case in other low-rainfall countries, a series of manurial plots with six-rowed barley on the—(1) Pasture, (2) bare fallow, (3) barley rotation has been arranged, and in these plots the same system of manuring as for the wheat manurial plots is being practised.

Manurial Plots with Six-rowed Barley—Veitch's Well, 1920-1921.

Plot.	Manuring per Acre.	Yield per Acre.					
		1920.		1921.		Means, 1920-1921.	
		Bush.	lbs.	Bush.	lbs.	Bush.	lbs.
28	½cwt. superphosphate	34	22	25	27	29	49
27	1cwt. superphosphate	28	15	28	49	28	32
26	2cwts. superphosphate	29	47	21	33	25	40
25	3cwts. superphosphate	25	6	23	42	24	24
24	No manure	27	36	14	40	21	13
23	1cwt. superphosphate, ½cwt. sulphate of potash	26	3	21	46	23	49
22	1cwt. superphosphate, ½cwt. nitrate of soda	32	22	19	15	25	43
21	1cwt. superphosphate, ½cwt. sulphate of potash, ½cwt. nitrate of soda	25	6	19	15	22	10
20	No manure	24	10	15	39	19	49

Cultivation Tests with Six-rowed Barley.

As in the case with the manurial plots, the cultivation tests on the—(1) Pasture, (2) bare fallow, (3) wheat rotation, were duplicated as to treatment with six-rowed barley as the crop instead of the wheat.

Cultivation Plots with Six-rowed Barley—Veitch's Well, 1920-1921.

Plot.	Treatment.	Yield per Acre.				Means,	
		1920.		1921.		1920-1921.	
		Bush.	lbs.	Bush.	lbs.	Bush.	lbs.
	Early Fallow (June-July).						
19	Ploughed 4in. deep and harrowed within a few days. (Cultivated whenever weeds or a crust rendered necessary.)	29	10	19	34	24	22
18	Ploughed 4in. deep and left rough throughout the winter. (Cultivated whenever weeds or a crust rendered necessary.)	26	7	18	12	22	9
17	Ploughed 4in. deep, rolled within a few days, and cultivated or harrowed according to circumstances. (Cultivated whenever weeds or a crust rendered necessary.)	30	41	23	29	27	10

Cultivation Plots with Six-rowed Barley—Veitch's Well, 1920-1921—(continued.)

Plot.	Treatment.	Yield per Acre. 1920. Bush	lbs.	1921. Bush.	lbs.	Means. 1920-1921. Bush.	lbs.
	Late Fallow (September).						
16	Ploughed 2in. deep and cultivated whenever weeds or a crust rendered necessary, but not rolled	34	8	20	17	27	12
15	Ploughed 4in. deep, heavily rolled the same day as ploughed, and immediately harrowed. (Cultivated whenever weeds or a crust rendered necessary.)	30	3	20	19	25	11

Rate of Seeding Tests.

A block of land in a fallowed field has been selected during each of the past seven years, and has been divided into plots, all of which have received a dressing of 1cwt. superphosphate per acre, but each one had a different quantity of seed wheat sown on it. The same variety of wheat was used on all plots in each individual year, and other than the amount of seed used on the plots, their treatment was identical. The results obtained over this period, 1915 to 1921, are set out below:—

Quantitative Seed Tests—Veitch's Well, 1915-1921.

(*Tests on Wheat Sown with* 1*cwt. Superphosphate per Acre.*)

Year.	30lbs. Wheat. B.	L.	45lbs. Wheat. B.	L.	60lbs. Wheat. B.	L.	80lbs. Wheat. B.	L.	Total Rainfall. In.	"Useful" Rainfall. In.
1915	9	47	10	9	10	45	9	57	9.83	8.79
1916	18	9	19	1	19	5	18	39	16.69	15.29
1917	22	53	23	42	23	56	26	31	16.60	11.56
1918	7	20	8	39	8	53	8	41	9.20	8.41
1919	7	21	7	20	7	51	8	34	13.24	5.16
1920	24	56	25	49	25	12	27	29	15.50	13.76
1921	17	13	19	31	19	16	18	31	12.36	8.24
Means .	15	22	16	19	16	25	16	54	12.98	9.23

Although the differences between the results in the mean yields are not very marked, they are sufficient to show that in this district:—

(1) 30lbs. of seed is not sufficient for the best results.

(2) The yields increase as the amount of seed wheat used is increased to 80lbs. of seed per acre.

(3) The greatest net increase of crop, over and above the crop produced from 30lbs. of seed wheat per acre, is secured by using 80lbs. of seed per acre, and this is also worth a considerable amount where a good stubble burn is required.

Fertiliser Tests.

As it will be some years before the results to be secured from the permanent manurial plots can be properly compared, and as tests with various dressings of superphosphate on wheat crops have been conducted on fallow land, it will be instructive to tabulate the yields obtained over the past seven years:—

Quantitative Fertiliser Tests—Veitch's Well, 1915-1921.

Year.	No Manure.		½cwt. Super.		1cwt. Super.		2cwts. Super.		3cwts. Super.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
1915	11	52	13	15	13	43	13	40	13	19
1916	13	39	17	7	18	49	18	32	21	31
1917	20	47	23	48	25	30	21	17	25	15
1918	5	17	6	20	7	28	8	22	9	9
1919	9	15	9	28	9	43	10	37	8	58
1920	23	8	28	43	28	19	32	29	31	37
1921	15	11	15	47	17	53	19	9	19	18
Means	14	10	16	21	17	20	17	20	18	26

ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. Beaumont, Orchard Instructor.]

Pruning will have been completed. Do not forget to paint over any big cuts, and trim bark to the wood with a sharp knife. Clean the pruning tools before putting them away.

The first ploughing will have been completed. See that the plough is in good order for the spring work; a coat of paint is a cost saver.

Strawberry beds should be clear of weeds and runners, and new beds planted. To prevent strawberry mildew, use lime sulphur composition, 1½galls. in 100galls. of rain water, and spray thoroughly.

Peach aphis will be in evidence. There is no easy way to stop this pest; it must be dealt with as it appears, perhaps twice weekly for a time. The best spray is tobacco wash with a mixture of resin wash added, as explained in Bulletin No. 70. A coarse nozzle and strong force is necessary for effective work.

When harvesting oranges and lemons, try cutting them instead of pulling them from the trees. Do not forget to grade the fruit for quality and size before sending to market. If you intend to do any budding this year, mark the best trees for bud selection; quantity and quality are the essential points. Sooty fungus is worrying a number of orange growers, and in many cases it is very much worse than it need be, owing to the dense growth. The trees must be thinned out. To clean them now, wash thoroughly with kerosine emulsion. Fruit covered with "soot" must be washed before marketing. Dig holes ready for planting citrus trees.

Where fungus pests have been bad, a winter spraying should be given of full strength Bordeaux or Burgundy mixtures.

Wet days are a good opportunity for cleaning and repairing tools and machinery, and spraying plants should be made ready for use.

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ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, July 12th, there being present Messrs. C. J. Tuckwell (Chairman), W. S. Kelly, Geo. Jeffrey, H. Wicks, F. Coleman, T. H. Williams, A. M. Dawkins, and the Secretary (Mr. Harold J. Finnis). Apologies were received from Professor Arthur J. Perkins and Col. J. Rowell, C.B.

Reappointment of Members.—The following members were appointed for a further period of two years:—Messrs. C. J. Tuckwell, F. Coleman, and H. Wicks.

Election of Officers.—Mr. W. S. Kelly and Capt. S. A. White were appointed to the positions of Chairman and Vice-Chairman, respectively.

Itinerant Instructors for River Murray Settlements.—This question was again brought before the Board, and a communication from the Minister of Agriculture was read as follows:—"Each of the irrigation district officers in these areas is a competent horticulturist, we have an Irrigation Instructor in Mr. Muspratt, and I understand that some, at least, of the soldier settlement inspectors of leases are qualified to advise soldier settlers. In addition, Mr. Savage's services are available. In the circumstances I cannot recommend the additional expenditure which would be involved in giving effect to the Board's suggestion." It was decided that the communication be referred to the next Conference of River Murray Branches.

Mixing Superphosphate with Flour on Coastal Boats.—A communication was received through the Minister of Agriculture from the Adelaide Steamship Company on this matter. It was decided to forward a copy of the communication to the Coorabie Branch.

Erection of Dehydrating Plant at Barmera.—The Conference of River Murray Branches of the Bureau passed the following resolution:—"That the Government be asked to consider the erection of a dehydrating plant at Barmera." This matter was referred to the Minister of Agriculture, who replied as follows:—"I very much doubt whether, with the favorable conditions that exist up river for drying by the sun, a dehydrating plant would be utilised to any extent. But if settlers wish for one, the terms of the Loans to Producers Act is surely liberal enough for the purpose, besides having the advantage that they would be their own managers." On the motion of Mr. Tuckwell, seconded by Mr. Coleman, it was decided to refer the matter back to the Minister of Agriculture, pointing out that the plant was desired particularly for the dehydration of tomatoes, to tide the soldiers over the time between the planting and the bearing of the vines and fruit trees.

Rail Freight on Potatoes.—In reply to a suggestion from the Rendelsham Branch of the Bureau, that a reduction of the freight on potatoes should be made, the Railways Commissioner stated:—"The distance from Millicent to Mile End is 333 miles, and for truck loads of not less than six tons of potatoes, the rate is 27s. 5d. per ton. It is correct that in Victoria the rate for potatoes, loaded to within 5 per cent. of the carrying capacity of the truck (usually 10 tons or 15 tons), is 17s. 4d. per ton, but such rate applies in Victoria only, and when Victorian potatoes are sent to Mile End the South Australian rate of 18s. 10d. applies from Serviceton (194 miles), making a through rate for 333 miles of 36s. 2d. per ton, or 8s. 9d. per ton in favor of the South Australian rate. It cannot therefore be contended that because of the railway freight the local merchants are losing the business, and I cannot recommend any reduction in our rates. The rates for the carriage of potatoes from the principal forwarding stations in Victoria to Mile End are as follows:—From Koroit (227 miles from Serviceton)—Victoria, 15s. 2d. per ton; South Australia, 18s. 10d. per ton; total, 34s. per ton. From Bungaree (223 miles from Serviceton)—Victoria, 15s. 2d. per ton; South Australia, 18s. 10d. per ton; total, 34s. per ton. From Trafalgar (362 miles from Serviceton)—Victoria, 18s. 2d. per ton; South Australia, 18s. 10d. per ton; total, 37s. per ton. From Koo-we-rup (329 miles from Serviceton)—Victoria, 17s. 2d. per ton; South Australia, 18s. 10d. per ton; total, 36s. per ton. As before stated, the rate from Millicent to Mile End (333 miles) is 27s. 5d. per ton." It was decided to forward a copy of the communication on to the Rendelsham Branch.

Trucking Facilities on the Peebinga Line.—In reply to a request from the Nunkeri and Yurgo Branch that the time allowed for loading trucks of roots be extended, and that a rake of trucks be supplied when ordered, a communication was received from the Railways Commissioner. It was decided to advise the Branch in terms thereof.

Afforestation.—In regard to the suggestion of the Board that the Conservator of Forests be appointed as a member of the Advisory Board, the Minister of Education replied as follows:—"After giving full consideration to the question, I am of the opinion that it is not desirable for an officer controlling a department to be connected with a Board which is virtually independent of the Ministerial head of his department."

Legislation Controlling Sale of Mill By-Products.—In reply to the suggestion of the Board that legislation be brought in to control the sale of adulterated bran and pollard, the following communication was received from the Crown Law Department:—"The Director of Chemistry suggests in his within minute that legislation might be passed to 'provide for each manufacturer of stock foods to be registered, and for the registration of brands, similar to the Fertilisers Act. Vendors by this could be required to guarantee their products as to nitrogen, fat, carbo-hydrates, fibre, and moisture, each fixing his own standard. Provision could be made in the Act for securing freedom from contamination by weevils, weevil dung, mould, sand, and dirt generally.' 1. The main difficulty which I see with regard to requiring vendors of bran and pollard to guarantee their products, each fixing his own standard, is that if this standard is to have a value it will probably vary in the case of each miller by reason of the fact that all millers do not employ equally efficient machinery, and must vary from time to time in the case of each particular miller by reason of the fact that he is not always milling wheat of the same quality. If the standards are to be of practical use, farmers and other users of bran and pollard will have to be instructed as to their relative value, and if the standards vary, as I have suggested, the process of educating bran and pollard users with regard to them will be expensive, and of very little value. Probably, in practice, the millers would all fix their standards very low so as to be safe, and would probably agree between themselves to fix approximately the same standard. If they did this the value of the standard would be lost. There is also a difficulty with regard to bran and pollard imported from other States and abroad. Would the importers be expected to register and each fix a standard? There is also to be considered the case of the man who buys a bushel of bran loose from the retailer. It would be very hard to prove that that particular brand did not comply with the standard fixed by the manufacturers, for the purchaser would have to first prove who the manufacturer was, and that the particular bran came out of one of the manufacturer's bags branded with his registered brand. 2. If bran or pollard is discovered by the purchaser to be so contaminated by weevils, weevil dung, mould, sand, or dirt, as not to be reasonably fit for the purpose of stock food, then the purchaser has an action against the seller under the Sale of Goods Act, 1895, for a breach of warranty, and there is no need for legislation to deal with such a matter. This kind of contamination would appear to be the chief ground of complaint, and while I do not say that *any* such contamination necessarily gives a right to action, I do not say that such a right of action exists when degrees of contamination are so great as to render the particular bran or pollard not reasonably fit for the purpose of food for stock. 3. I certainly do not think that legislation as suggested by Dr. Hargreaves would base any hopes upon it. Its effect would be (to adopt Dr. Hargreaves' own language in another context) 'to harass the honest man and allow the adulterator to get off.' The principle of 'standards' has worked well in the case of the Fertilisers Act, 1918, and the Insecticides Act, 1919, but this is mainly because the constituents of particular fertilisers and insecticides should remain constant, and there are distinct and well-known varieties of fertilisers and insecticides, whereas there could not be said to be any easily recognised distinct varieties of bran or pollard." On the motion of Mr. Tuckwell, seconded by Mr. Wicks, it was decided that prominence be given in the *Journal of Agriculture* to the communication from the Crown Law Department. The Secretary was instructed to thank the Crown Law Department for its opinion on this matter.

Winter School for Farmers.—An invitation was received from the Principal of the Roseworthy Agricultural College, inviting the Chairman and members of the Board to be present on the occasion of the opening of school on Monday, July 17th, 1922. The Secretary was instructed to represent the Board on this occasion.

Thirty-third Annual Congress.—The Secretary reported that approval had been obtained for the provision of rail, steamer, and coach fares to enable two delegates from each Branch to attend the Congress to be held during September next.

Conferences.—The Secretary reported that the following Conferences would take place during August:—Upper Northern district, at Orroroo, on Thursday, August 3rd; Pinnaroo district, at Pinnaroo, on Tuesday, August 15th; Franklin Harbor district, at Cleve, on Friday, August 25th; Southern district, at Milang, on August 29th.

Compulsory Dipping of Sheep.—A resolution was received from the Gladstone Branch to the effect "That this Branch is opposed to the Mid-Northern district being exempt from dipping." On the motion of Mr. Dawkins, seconded by Mr. Coleman, it was decided to forward the matter on to the Chief Inspector of Stock for a report.

Growing Tooart Gum at Wanilla Forest.—The following resolution was received from the Petina Branch of the Bureau:—"That the Advisory Board endeavor to have the Tooart gum grown at Wanilla Forest, near Lincoln." It was decided to forward the matter on to the Conservator of Forests for a report.

Discussions at Bureau Meetings.—A communication was received from the Talia Branch, asking if discussions on proposed railways, water conservation, and kindred subjects are allowed to be debated at Bureau meetings. The Secretary was instructed to reply that the Board does not object to these matters being discussed, but it would not undertake to make recommendations on such matters when presenting them to the Minister.

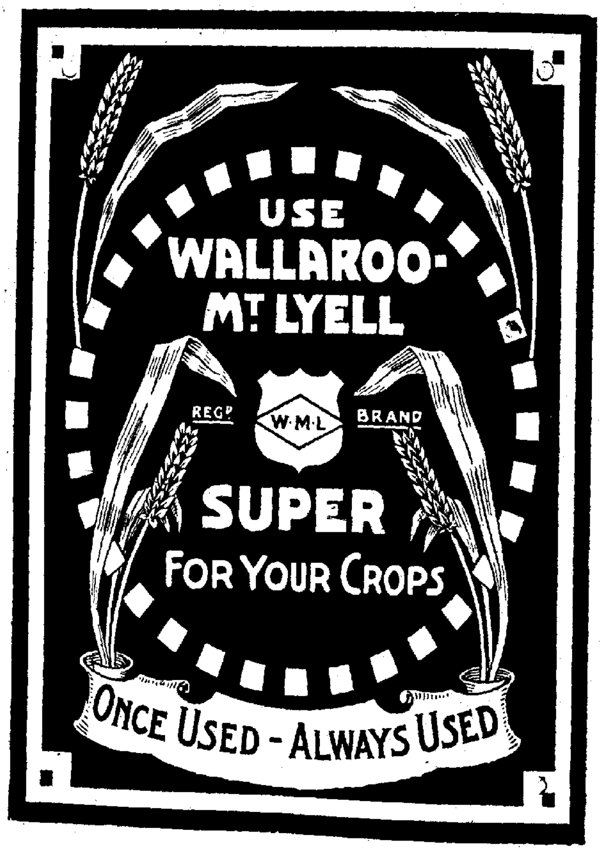
New Branches.—Approval was given for the formation of Branches at Marama and Nelshaby, with the following gentlemen as members:—Marama—A. C. Greig, F. Richards, F. H. Richards, W. S. Gray, G. Mills, F. H. Hutchinson, S. M. Hutchinson, R. Greig, T. Smith, and E. C. Tilly. Nelshaby—L. C. Roberts, A. M. Lawrie, T. B. Jose, F. Jose, M. Anoils, E. T. Franks, C. Plenty, J. S. Edwards, A. Sprott, S. R. Mills, W. Stolte, P. J. Shinnick, A. Wauchope, J. M. Shinnick.

Branches to be Closed.—It was decided to close the Caltowie and Meribah Branches.

Life Members.—The names of Messrs. R. H. Cooper, Riverton Branch, and A. R. Ramsey, Elbow Hill Branch, were added to the roll of life members of the Bureau.

New Members.—The names of the following gentlemen were added to the rolls of existing Branches:—Balaklava—C. T. Moody; Gawler River—J. Chamberlain; Kangarilla—C. Oakley, W. J. Golder, W. Osmond, G. Connor, H. Nicolle, H. J. Osmond, H. B. Osmond, J. Jones, jun.; Tarcowie—V. Chapplin; Saddleworth Women's—Mrs. B. Beard, Mrs. C. Pellew, Miss E. Coleman; Watervale—A. Smith; Elbow Hill—H. W. Wheeler, W. T. Storey; Petina—C. L. Campbell; Miltalie—W. G. Siegman; Streaky Bay—P. P. Mooney, W. T. Rutherford, H. Wharff, Jas. Williams, J. G. Williams, R. Abbott; Hookina—R.

Wardleworth; Yeelanna—O. K. Frost, W. Wagner, A. S. Bache; Redhill—E. J. Murphy; Eurelia—R. A. Cahill, J. J. Dinon, E. Cummings, M. T. Wall; Moonta—H. Goldsworthy, J. H. Andrews; Warcowie—R. Newton; Bundaleer Springs—A. McEvoy, A. McAskill; Hartley—T. Hooper, G. Davies, N. Whellar; Maltee—A. J. Bowell, J. A. Ferguson; Lone Gum—C. T. Clarke, W. E. Rix, E. Golledge, F. L. Richardson, J. Minnis, J. O'Callaghan, R. Kernot, R. Ralph, E. N. Hall, V. Adams, R. S. Price, K. B. Hocking; Tarlee—H. Drummond; Milang—C. G. Jones; Parilla—H. R. Stevens; Lone Gum—R. Sykes, J. H. Sandemann, J. F. Morrison, N. H. Jellett; Yurgo—H. M. McKenzie; Eurelia—P. Cummings, C. Stott, W. T. Brown, T. Brown; Renmark (Block E)—G. Eaton; Petina—H. C. Holberten; Gladstone—C. H. Lines, H. J. Lines, P. J. Sexton, T. Brown; Saddleworth—H. Rex, L. W. Frost.



RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR APRIL, 1922.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during April.	Per Cow during April.	Per Cow October to April.	Per Herd during April.	Per Cow during April.	Per Cow October to April.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/A	13	11·47	7,467	574·38	4,113·86	365·43	28·11	186·47
1/C	28·13	17·20	13,160·5	467·85	4,815·32	535·66	19·04	200·69
1/E	17·40	13·83	7,859	451·67	3,688·97	359·93	20·69	163·46
1/G	50	45·70	36,557·5	731·15	5,965·59	1,398·65	27·97	230·23
1/I	11	10	6,570	597·27	4,767·44	285·61	25·96	203·24
1/J	17·10	15·67	8,073·5	472·13	4,072·08	407·37	23·82	186·25
1/K	15	11	6,705	447·00	4,359·56	317·95	21·20	192·96
1/L	13·90	9·97	4,592·5	330·40	3·422·75	216·24	15·56	164·91
1/M	17	15·93	7,923	466·06	3,485·49	389·41	22·91	161·27
1/O	33	20·20	9,760·5	295·77	3,491·84	467·21	14·16	162·03
1/R	19	13·20	7,020	369·47	2,593·52	354·09	18·64	129·46
1/S	10·47	8·97	5,673	604·32	3,414·50	253·42	27·19	151·10
1/T	14	12·57	8,245	588·93	3,466·97	389·20	27·80	171·78
1/U	11	10	7,425	675·00	4,606·43	347·10	31·55	209·93
1/V	16	15·40	7,425	464·06	3,496·88	367·80	22·99	156·73
Means	19·07	15·41	9,630·43	505·09	4,177·39	430·34	22·57	182·21

Corrigenda.—Herd 1/J, February, 1922. —"Milk per cow, October, to February" should be 3,094·01, not 3,101·01.

Herd 1/J, March, 1922—"Milk per cow, October to March," should be 3,599·95, not 3,606·95.

COWS YIELDING 1,000GALLS. OF MILK, OR 400LBS. BUTTERFAT.

Since the inception of the River Murray Herd Testing Association, October 1st, 1920, the following cows have yielded either 1,000galls. of milk or 400lbs. of butterfat in a lactation period :—

Name of Cow.	Owner.	No. of Days.	Milk.	Butterfat.
			Galls.	Lbs.
"Donald's Maid of Riverdale"	J. A. Halliday, Murray Bridge.	247	1,215·20	450·29
"Sandy"	C. J. Ware, Monteith	319	820·15	400·86
"Mounty"	B. H. Green, Monteith	264	673·35	406·96
"Shamrock"	C. J. Morris, Monteith	281	964·90	454·07
"Donald's Pride of Riverdale"	J. A. Halliday, Murray Bridge.	310	1,054·15	461·45
"Pearl"	E. W. Mountstephen, Monteith	319	848·25	412·01
"Blossom"	E. W. Mountstephen, Monteith	319	865·70	405·59
"Jinny"	C. J. Morris, Monteith	303	827·35	411·60
"Dolly Hawker"	J. A. Halliday, Murray Bridge.	284	1,201 55	446·63
"Beauty"	P. H. Pickering, Mypolonga ..	319	1,020·50	386 57
"Nancy"	C. J. Morris, Monteith	281	,035·30	408·55

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF JULY.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Booborowie.—Weather—The weather for July was exceedingly cold and wet, and 3.41in. of rain were registered up to the time of writing. Crops—Crops are making slow growth, but very healthy looking. Natural feed is very short, and will not make much growth until the end of August. Stock are all in very good condition, where not grazed on overstocked country. Pests—Rabbits are numerous in places, and they are breeding with great rapidity. Miscellaneous—Fallowing is being pushed on with as quickly as wet weather will allow.

Kybybolite.—Weather—For the first three weeks of the month cold conditions prevailed, with some heavy rain at the middle of the month. The last week has been comparatively mild and fine. Two and a half inches of rain were registered, which is ½in. less than the average, and the total for the year is now about 9½in. Several frosts and heavy fogs were noted. Crops have made very good growth, the short rainfall helping materially in this respect. Pea crops have germinated well, and some barley has been sown during the last few days. Conditions are now favorable for preparing soil for summer crops of turnips, kale, maize, &c. Natural feed has been good, and practically no handfeeding has been necessary during the month. Stock—In very good condition, especially sheep and cattle. Prospects are good for the spring lambs.

Turretfield.—Weather—This month has been very wet, rain having fallen on 14 days, and 362 points have been registered. Crops—The excessive moisture in the land is giving the crops a poor color, especially where land has been cropped too often without spelling. Natural Feed—There is a fair quantity of natural feed, and this should come away when the weather warms up. Stock is mostly in fair condition; some flocks are rather on the poor side. Pests—The lucerne flea has not quite disappeared, but is not doing much damage.

Veitch.—Weather conditions have been very mild, with light showers of rain. Rainfall for month to date, 81 points; Veitch average, 106 points. Have not had the usual number of July frosts. Crops making very fast growth, and early sown showing rather rank growth. Natural feed just sufficient to keep stock in healthy condition. Stock—All doing well. Pests—Rabbits require attention. Miscellaneous—Roads in the district are being improved. Wood is being consigned away in large quantities.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on August 1st, 1922:—

BUTTER.—During July the weather was wet and cold, and this had the effect of retarding the increase in supplies of butter. The rains were general, and prospects look particularly favorable for those interested in the dairying industry. London merchants have not been buying to any extent, as it is between seasons with them, and the small quantities offering here do not interest them. However, we expect during this month that they will be operating at prices which will be remunerative to producers. At the close of the month first grade to choicest factory and creamery fresh butter in bulk sold from 1s. 6d. to 1s. 6½d.; best private separators and dairies, 1s. 4½d. to 1s. 5½d.; fair quality, 1s. 2½d. to 1s. 3½d.; store and collectors, 11d. to 1s. 2d.

EGGS.—Demand during the month has been exceptionally keen. Pastrycooks were buying extensively, as they had practically exhausted their supplies of pulp and pickled eggs. This caused values to firm, and at the close of the period fresh hen sold at 1s. 9d.; duck, 1s. 10d.

CHEESE.—Values have come back owing to the lower prices ruling in Queensland, who offered to Western Australia at prices considerably under ours, so that we had to meet the competition, and rates receded, the present range being from 8d. to 8½d. for large to loaf.

HONEY.—Rates have advanced for prime clear samples, which are selling now at 4d. to 4¼d., but second grades are still neglected at 2d. to 2½d. Beeswax is saleable at 1s. 9d. for good samples.

ALMONDS.—Only odd lots have been coming forward, as most stocks have been exhausted. All consignments have met with ready sales, Brandis at close of month selling at 1s. 1d.; mixed softshells, 1s.; hardshells, 5½d.; kernels, 1s. 11d. to 2s.

BACON.—Values for the live animal have advanced during the month, and bacon rates have gone up in sympathy. Nice business has been put through both for local and export. Hams have been rather slow of sale, which is usual at this time of the year. Best factory-cured sides sold at 12½d. to 1s. 1d.; middles, 1s. 2d. to 1s. 2½d.; hams, 1s. 1½d. Lard, in packets, 8d.; bulk, 7½d.

LIVE POULTRY.—The forwardings have been very extensive throughout the month, heavy catalogues being submitted Tuesdays, Thursdays, and Fridays. It is pleasing to report that markets have been readily cleared, and good prices have ruled up to date. As the demand is good, nice prices are likely to rule for some considerable time. Crates obtainable on application. At end of month rates were:—Prime roosters, 4s. 6d. to 6s. 8d.; nice-conditioned cockerels, 3s. 3d. to 4s. 3d.; plump hens, 3s. 9d. to 5s. 3d.; medium hens, 2s. 9d. to 3s. 6d.; few pens weedy sorts lower; ducks, prime quality, 4s. to 5s. 6d.; fair quality, 2s. 6d. to 3s. 9d.; geese, 5s. to 6s. 6d.; turkeys, prime conditioned, 1s. to 1s. 3½d. per lb. live weight; fair conditioned, 9d. to 11½d. per lb.; pigeons, 6½d.

POTATOES.—Since our last report the Victorian market rates moved up again, and remained firm throughout. At times there was a little difficulty in getting supplies. However, consignments are coming through now freely, whilst there is an odd truck or two of South-Eastern and hills grown coming to hand. Quotations at end of month were:—Millicent Redskins, £4 15s. to £5 10s., on trucks Millicent; Victorian Snowflakes, £9 10s. to £10, on trucks Mile End; Carmens, £10 to £11.

ONIONS.—There were further increases in rates during the month, and supplies were only very limited. Values at the end of the month were from £15 to £17 on trucks, Mile End.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of July, 1922, also the average precipitation to the end of July, and the average annual rainfall.

Station.	For July, 1922.	To end July, 1922.	Av'ge to end July, 1922.	Av'ge. Annual Rainfall
Far North and Upper North.				
Oodnadatta	—	3·65	3·16	4·83
Marree	0·17	1·99	3·69	6·10
Farina	0·29	2·81	4·22	6·73
Copley	0·31	2·46	5·24	8·45
Beltana	0·46	3·59	5·47	9·01
Blinman	1·16	4·86	7·70	12·62
Tarcoola	0·57	2·40	3·01	7·59
Hookina	0·95	8·48	7·86	13·30
Hawker	1·38	8·97	7·40	12·72
Wilson	1·58	8·14	7·29	12·33
Gordon	0·82	6·35	6·51	11·05
Quorn	1·37	6·61	7·02	14·00
Port Augusta	0·82	6·46	5·60	9·54
Port Augusta West	0·83	6·04	5·37	9·53
Bruce	0·84	6·01	5·93	10·40
Hammond	1·18	7·11	6·60	11·61
Wilmington	2·33	10·88	10·43	18·17
Willowie	2·04	9·71	6·86	12·16
Melrose	4·15	16·83	13·70	23·21
Booleroo Centre	2·27	10·29	8·73	15·53
Port Germein	1·62	8·33	7·27	12·79
Wirrabara	2·62	10·04	11·24	19·62
Appila	2·39	8·48	9·33	14·98
Cradock	0·97	8·05	6·50	11·18
Carrieton	1·21	7·47	7·16	12·63
Johnburg	1·03	8·25	6·85	10·50
Eurelia	1·40	7·72	7·37	13·36
Orroroo	1·64	8·40	7·86	13·57
Nackara	0·94	9·44	6·86	11·33
Black Rock	1·94	8·21	7·11	12·51
Ucolta	1·34	6·15	6·75	11·90
Peterborough	1·74	7·75	8·76	13·43
Yongala	2·26	8·71	7·84	14·41
Lower North-East.				
Yunta	1·49	4·29	5·11	8·75
Waukaringa	0·52	3·06	4·85	8·41
Mannahill	0·33	1·37	4·95	8·54
Cockburn	0·73	3·32	5·60	8·22
Broken Hill, N.S.W.	1·00	4·67	—	9·91
Lower North.				
Port Pirie	1·77	9·60	7·79	13·36
Port Broughton	1·67	9·58	8·33	14·18
Bute	1·68	8·56	9·22	15·65
Laura	2·59	12·41	10·13	18·16
Caltowie	2·43	11·51	9·26	17·07
Jamestown	3·15	12·38	9·60	17·74
Bundaleer W.Wks.	2·44	11·44	9·49	17·89
Gladstone	2·60	12·63	8·80	16·13
Crystal Brook	2·36	10·19	8·95	15·74
Georgetown	3·38	14·41	10·32	18·44
Narridy	1·84	8·78	9·25	16·41
Redhill	1·96	9·49	9·66	16·75

Station.	For July, 1922.	To end July, 1922.	Av'ge. to end July, 1922.	Av'ge. Annua Rainfa
Lower North—*continued.*				
Spalding	2·24	10·68	10·63	20·3
Gulnare	2·88	12·31	10·21	19·2
Yacka	2·94	9·89	8·56	15·3
Koolunga	2·10	9·10	8·76	15·7
Snowtown	2·51	9·68	9·27	15·9
Brinkworth	3·15	9·61	8·81	16·1
Blyth	4·16	12·04	9·67	16·7
Clare	6·00	18·27	14·08	24·5
Mintaro	4·71	17·65	17·74	23·2
Watervale	5·79	19·78	15·39	27·4
Auburn	4·58	16·30	13·87	24·2
Hoyleton	4·11	12·24	10·01	17·7
Balaklava	4·16	11·46	9·03	15·8
Port Wakefield	2·21	7·75	8·05	13·1
Terowie	1·59	8·61	7·37	13·6
Yarcowie	1·07	10·99	7·81	14·0
Hallett	2·65	8·87	8·82	16·3
Mount Bryan	1·14	9·29	8·85	16·5
Kooringa	3·11	12·48	10·19	17·9
Farrell's Flat	3·14	11·75	10·58	18·9
West of Murray Range.				
Manoora	3·56	14·25	12·64	18·6
Saddleworth	3·49	13·21	11·18	19·7
Marrabel	3·64	14·53	10·68	19·5
Riverton	4·39	15·03	11·69	20·6
Tarlee	4·26	13·63	9·92	17·7
Stockport	3·92	13·19	8·95	16·3
Hamley Bridge	2·63	11·16	9·24	16·4
Kapunda	3·87	12·38	11·28	19·8
Freeling	4·16	13·08	9·97	17·8
Greenock	4·39	14·36	10·90	21·3
Truro	3·65	12·91	11·26	20·0
Stockwell	4·26	13·33	11·32	20·2
Nuriootpa	4·43	13·82	11·76	20·9
Angaston	4·33	15·56	12·61	22·4
Tanunda	3·97	14·83	12·74	22·1
Lyndoch	3·67	14·80	12·94	22·8
Williamstown	4·90	16·62	16·15	27·5
Adelaide Plains.				
Mallala	4·03	11·11	9·56	16·5
Roseworthy	3·58	10·93	9·79	17·2
Gawler	3·74	11·21	11·15	19·0
Two Wells	3·67	9·93	9·46	15·8
Virginia	2·97	9·65	10·16	17·3
Smithfield	3·87	10·76	9·81	17·1
Salisbury	3·65	12·06	10·96	18·4
North Adelaide	6·09	17·12	13·12	22·0
Adelaide	4·22	14·28	12·67	21·6
Glenelg	3·78	13·21	11·03	18·3
Brighton	4·14	14·14	11·92	21·2
Mitcham	5·74	21·48	14·41	23·9
Glen Osmond	5·47	20·40	15·51	25·7
Magill	4·59	17·97	15·16	25·2

RAINFALL—*continued.*

Station.	For July, 1922.	To end July, 1922.	Av'ge. to end July, 1922.	Av'ge. Annual Rainfall
MOUNT LOFTY RANGES.				
Teatree Gully	3·84	14·69	17·32	27·77
Stirling West	7·82	33·53	26·74	46·62
Uraidla	7·97	32·09	26·33	44·06
Clarendon	7·00	24·87	19·69	32·98
Morphett Vale	5·17	16·99	13·54	22·76
Noarlunga	5·52	14·10	12·24	20·27
Willunga	6·38	21·14	15·68	25·87
Aldinga	4·09	15·40	11·34	20·24
Myponga	7·35	22·67	17·23	28·44
Normanville	4·94	17·51	12·71	20·51
Yankalilla	4·51	19·66	14·34	22·99
Mount Pleasant	4·68	19·20	15·96	27·04
Birdwood	4·58	17·32	16·91	29·26
Gumeracha	5·34	19·88	19·32	33·25
Millbrook Reservoir	5·60	27·74	—	—
Tweedvale	5·51	19·92	20·67	35·54
Woodside	5·47	21·75	18·49	32·08
Ambleside	5·91	23·34	19·85	34·62
Nairne	5·13	17·15	16·49	28·43
Mount Barker	6·49	22·57	18·06	31·13
Echunga	7·28	23·10	19·37	32·91
Macclesfield	6·39	20·17	17·45	30·53
Meadows	7·76	24·95	20·87	36·04
Strathalbyn	4·77	12·61	11·26	19·26
MURRAY FLATS AND VALLEY.				
Meningie	3·76	13·79	10·00	18·66
Milang	3·54	10·99	9·18	15·42
Langhorne's Bridge	4·01	12·00	8·23	14·55
Wellington	2·84	10·03	8·24	14·68
Tailem Bend	3·00	9·71	7·80	14·11
Murray Bridge	2·74	8·80	7·89	13·83
Callington	4·04	10·76	8·87	15·37
Mannum	2·11	7·71	6·80	11·52
Palmer	2·72	8·42	8·30	15·24
Sedan	2·25	7·55	6·96	12·13
Swan Reach	1·08	6·57	5·88	10·82
Blanchetown	0·59	3·86	5·77	10·16
Eudunda	2·67	10·77	9·10	17·50
Sutherlands	1·55	7·58	5·87	10·92
Morgan	0·83	5·59	4·96	9·18
Waikerie	1·02	5·41	5·00	9·68
Overland Corner	1·02	5·79	6·02	11·08
Loxton	1·02	8·41	6·48	12·58
Renmark	1·20	7·11	5·65	11·02
WEST OF SPENCER'S GULF.				
Eucla	1·16	7·12	6·44	10·02
White Well	1·71	8·94	5·35	9·10
Fowler's Bay	2·65	8·32	8·00	12·19
Penong	2·60	9·03	7·91	12·25
Ceduna	1·80	5·33	5·96	10·32
Smoky Bay	2·13	7·71	6·92	10·92
Petina	1·94	7·86	7·61	13·05
Streaky Bay	2·45	9·19	9·51	15·11
Talia	2·09	7·98	8·77	15·38
Port Elliston	3·10	11·31	10 48	16·53
Cummins	2·59	9·84	—	18·87
WEST OF SPENCER'S GULF—*continued.*				
Port Lincoln	2·82	10·66	12·16	19·75
Tumby	2·09	6·61	8·28	14·62
Carrow	1·70	5·66	7·70	14·64
Arno Bay	1·38	4·52	7·34	13·08
Cowell	1·70	4·68	5·78	11·52
Minnipa	2·24	6·22	—	—
YORKE PENINSULA.				
Wallaroo	1·42	7·43	8·75	14·09
Kadina	1·80	8·54	9·88	15·93
Moonta	1 71	7·97	9·56	15·25
Green's Plains	1·76	8·36	9·34	15·72
Maitland	3·07	11·17	12·14	20·05
Ardrossan	2·03	8·78	8·37	13·95
Port Victoria	2·11	9·22	9·40	15·35
Curramulka	2·39	9·49	10·89	18·16
Minlaton	2·32	10·21	11·25	17·79
Brentwood	2·25	9·15	9·32	15·54
Stansbury	1·86	8·95	10·14	16·96
Warooka	2·50	11·73	10·84	17·69
Yorketown	2·26	9·56	10·38	17·22
Edithburgh	2·33	9·39	9·95	16·53
SOUTH AND SOUTH-EAST.				
Cape Borda	4·78	15·83	16·24	25·01
Kingscote	3·11	10·05	12·06	19·01
Penneshaw	3·74	11·15	11·95	18·97
Victor Harbor	4·08	14·94	12·87	21·43
Port Elliot	4·98	15·23	11·92	20·00
Goolwa	3·60	10·07	10·66	17·83
Meribah	0·92	7·90	—	—
Mindarie	0·92	5·80	—	—
Karoonda	2·80	10·01	—	—
Pinnaroo	1·65	7·70	8·41	15·32
Parilla	1·61	8·04	7·50	14·39
Lameroo	2·07	9·10	8·62	16·27
Parrakie	2·04	8·12	7·31	14·27
Geranium	3·51	12·55	8·40	15·96
Peake	2·27	10·21	7·66	15·91
Cooke's Plains	2·88	11·23	8·32	14·84
Coomandook	2·30	11·01	9·73	17·31
Coonalpyn	1·64	9·64	9·81	17·44
Tintinara	2·45	11·48	10·15	18·54
Keith	2·31	11·46	9·77	18·19
Bordertown	2·47	9·27	10·80	19·44
Wolseley	2·57	9·15	9·87	18·06
Frances	2·15	9·46	—	19·78
Naracoorte	3·53	12·16	12·70	22·46
Penola	3·01	12·55	14·95	26·36
Lucindale	2·58	13·90	13·34	22·91
Kingston	3·29	16·60	14·92	24·44
Robe	4·21	18·87	15·33	24·58
Beachport	3·11	16·23	17·35	27·27
Millicent	4·14	17·62	18·00	29·37
Kalangadoo	3·95	16·86	—	—
Mount Gambier	4·06	15·55	18·10	31·46

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		Aug.	Sept.			Aug.	Sept.
Alawoona	*	—	—	Freeling	*	—	—
Aldinga	*	—	—	Gawler River	*	7	4
Amyton	66	—	4	Georgetown	*	5	2, 30
Angaston	*	—	—	Geranium	88	26	30
Appila-Yarrowie	*	—	—	Gladstone	71	4	1
Arthurton	80	—	—	Glencoe	*	—	—
Ashbourne	89	—	—	Glossop	88	—	—
Balaklava	*	12	9	Goode	*	9	6
Balhannah	90	4	1	Green Patch	82	7	4
Barmera	‡	8	5	Gumeracha	*	7	4
Beetaloo Valley	66	7	4	Halidon	*	—	—
Belalie North	*	5	2, 30	Hartley	*	11	6
Berri	‡	9	6	Hawker	*	8	5
Big Swamp	*	—	—	Hilltown	*	—	—
Blackheath	92	5	2, 30	Hookina	64	3, 31	—
Black Springs	72	8	5	Inman Valley	*	—	—
Blackwood	*	21	18	Ironbank	94	5	2, 30
Block E	71	—	—	Julia	*	—	—
Blyth	68	5	2, 30	Kadina	*	—	—
Booleroo Centre	‡	4	1	Kalangadoo	†	12	9
Borrika	*	—	—	Kangarilla	‡	4	8
Bowhill	*	—	—	Kanmantoo	*	5	9
Brentwood	75	3, 31	—	Keith	*	—	—
Brinkley	†	5	2, 30	Ki Ki	*	—	—
Bundaleer Springs	71	7	4	Kilkerran	76	3, 31	—
Burra	*	—	—	Kimba	*	—	—
Bute	*	8	5	Kingscote	*	—	—
Butler	‡	3, 31	—	Kingston-on-Murray	*	—	—
Cadell	*	—	—	Kongorong	100	3, 31	—
Canowie Belt	*	—	—	Koonibba	‡	4	1
Carrow	93	3	2	Koppio	*	7	4
Cherry Gardens	*	8	5	Kybybolite	100	3, 31	—
Clanfield	*	—	—	Lake Wangary	*	5	2, 30
Clare	‡	—	1	Lameroo	†	4	8
Clarendon	97	7	4	Laura	71	5	9
Claypan Bore	*	9	6	Leighton	*	—	—
Cleve	*	2	6	Lenswood and Forest Range	†	7	3
Collie	†	—	—	Lone Gum	88-9	2	6
Colton	*	25	29	Lone Pine	72	—	—
Coomandook	*	2	6	Longwood	*	12	9
Coonalpyn	88	11	8	Loxton	*	—	—
Coonawarra	*	—	—	Lucindale	*	—	—
Coorabie	80	—	—	Lyndoch	†	3, 31	—
Cradock	*	—	—	McLachlan	†	—	—
Crystal Brook	*	5	2, 30	Maitland	80	31	—
Cygnet River	97	3, 31	—	Mallala	72	7	4
Dawson	*	—	—	Maltee	†	4	1
Denial Bay	*	—	—	Mangalo	*	—	—
Dowlingville	*	—	—	Meadows	97	2	6
Edillilie	*	26	30	Meningie	*	—	—
Elbow Hill	80	8	12	Meribah	*	2	6
Eurelia	64	11	8	Milang	94	12	9
Frances	‡	26	30				

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Minlaton	*	4	1
Minnipa	*	2	6
Mintaro	‡	5	2, 30
Monarto South	‡	—	2, 30
Moonta	77	4	1
Moorak	*	3, 31	—
Moorlands	*	—	—
Moorook	*	—	—
Morchard	66	6	2, 30
Morgan	*	—	—
Morphett Vale	97	10	7
Mount Barker	*	2	6
Mount Bryan	*	—	—
Mount Byran East	*	—	—
Mount Compass	*	—	—
Mount Gambier	98	12	9
Mount Hope	84	12	2
Mount Pleasant	‡	11	8
Mount Remarkable	66	—	—
Mundalla	*	2	6
Murray Bridge	89	15	19
Mypolonga	*	2	6
Myponga	*	—	—
Nantawarra	74	3, 31	—
Naracoorte	100	12	9
Narridy	71	12	9
Narrung	*	12	9
Neeta	*	—	—
Netherton	†	—	—
North Booborowie	*	—	—
North Bundaleer	*	—	—
Northfield	*	9	13
Nunkeri and Yurgo	*	6	3
O'Loughlin	*	2	6
Orroroo	66	—	—
Owen	‡	—	1
Parilla	89	—	—
Parilla Well	†	7	4
Parrakie	*	—	—
Paruna	‡	—	—
Paskeville	78	8	5
Penola	‡	5	2, 30
Petina	*	26	30
Pinnaroo	†	11	8
Pompoota	*	—	—
Port Broughton	69	4	1
Port Elliot	97	19	16
Port Germein	*	12	9
Pygery	*	—	—
Ramco	*	7	4
Rapid Bay	96	5	2, 30
Redhill	69	—	4
Rendelsham	99	2	6
Renmark	‡	—	—
Riverton	*	—	—

Branch.	Report on Page	Dates of Meetings.	
		Aug.	Sept.
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Rockwood	96	7	4
Rosedale	‡	—	—
Rosy Pine	*	—	—
Saddleworth	†	—	—
Saddleworth (Women's)	*	—	—
Salisbury	74	1	5
Salt Creek	†	—	—
Sandalwood	*	—	—
Second Valley	*	—	—
Shoal Bay	*	—	5
Smoky Bay	‡	—	—
Spalding	*	—	—
Stockport	‡	—	—
Streaky Bay	‡	—	—
Strathalbyn	*	8	5
Talia	‡	7	11
Tantanoola	*	5	2
Taplan	*	12	9
Tarcowie	65	8	5
Tarlee	74	—	—
Tatiara	†	19	16
Two Wells	*	—	—
Uraidla & Summertown	*	7	4
Veitch	*	—	—
Virginia	*	—	—
Waikerie	89	—	—
Wall	*	—	—
Wanbi	*	—	—
Warcowie	*	—	—
Watervale	75	—	—
Weavers	79	7	4
Whyte-Yarcowie	*	—	—
Wilkawatt	*	5	2
Williamstown (Women's)	75	12	6
Williamstown	75	4	1
Willowie	*	2	6
Wilmington	66	2	6
Windsor	75	—	—
Winkie	88	—	—
Wirrabara	70	5	2
Wirrega	*	—	—
Wolowa	*	—	—
Wudinna	*	—	—
Wynarka	‡	6	2
Yabmana	*	—	—
Yacka	*	8	5
Yadnarie	*	1	5
Yallunda	*	—	—
Yaninee	*	—	—
Yeelanna	*	5	2
Yongala Vale	*	—	—
Yorketown	*	—	—
Younghusband	*	10	7

* No report received during the month of March

‡ Held over until next month.

† Annual Meeting.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

EURELIA.

July 7th.—Present: nine members and one visitor.

Care of Farm Machinery.—Mr. W. H. Shephard contributed a paper on this subject. The enormous increase in the price of farm machinery, he said, warranted the erection of a suitable machine and implement shed. If any implement was not protected from the elements, its period of usefulness would be considerably shortened. A memorandum should be made in a notebook of any parts that were worn, in order that they might be repaired before the machine was taken into the paddock. Machinery should be cleaned thoroughly before it was put in the shed, because that would save a great deal of trouble when overhauling the machine for the next season. If the machine was oiled and put in gear before it was taken into the paddock one could see that all the bearings were working freely and taking the oil. In his opinion the implement shed should be constructed of galvanized iron, because that was the cheapest and most suitable, and there would not be so much danger from fire; neither would it provide a harbor for sparrows. He preferred a shed 24ft. wide, the front and back posts being 8ft. high, and the two centre ones about 3ft. each side of the centre of the roof. The centre of the roof should be 6ft. higher than the outsides, and all the posts bolted on to the rafters; bolts should also be used for the battens. One side and the two ends should be enclosed to prevent the weather from beating in. To keep the poultry out of the shed he suggested using two widths of 3ft. 6in. wire netting on posts erected in line with the shed posts and about 6ft. from the entrance. The netting should be cut at each post, so that it could be taken down separately. A good discussion followed the reading of the paper.

HOOKINA (Average annual rainfall, 12in.).

July 6th.—Present: 12 members and three visitors.

Dairying.—Mr. R. Wardleworth, who contributed a short paper dealing with this subject, first made reference to the new Act of Parliament whereby all owners of bulls over the age of six months were compelled to pay a registration fee of 10s. He considered the scheme an excellent one, and believed it would materially assist in ridding the country of a lot of mongrel bulls. The speaker expressed a preference for the Milking Shorthorn breed of cattle, for he contended that in addition to being good milkers, they were large-framed, which enabled the dairyman to fatten and dispose of them to the butcher when they had completed their period of milking. The animals should be milked twice each day, and at regular hours, and treated at all times with kindness and patience. Four or five acres of land should be set aside for a lucerne plot for feeding to the cows at milking time. The erection of a shed was a most important item, both for comfort and cleanliness. The walls should be high on three sides, a floor of concrete set down, and if the separator room was attached to the shed the handling of the milk would be considerably facilitated. The milking utensils and separator parts should, after each time of using, be thoroughly washed with hot water. Finally, a good supply of clean drinking water should always be available for the animals. In the discussion that followed

Mr. B. Murphy did not favor the compulsory registration of bulls. For a cow shed he thought a straw roof, running east and west, and inclosed on three sides with galvanized iron would meet the requirements of the ordinary farmer. Mr. A. Heneschke spoke of the value of lucerne as a fodder for dairy cattle.

TARCOWIE (Average annual rainfall about 15½in.).

July 4th.—Present: nine members.

MACHINERY AND GENERAL WORKING ON THE FARM.—Mr. D. Smith contributed a paper on this subject, in which he said a use could be found for most of the old machinery on the farm. By taking off the tynes from an old scarifier and placing two or three pieces of timber and a tank across the frame an excellent water cart could be made for taking water out into the paddocks. If some such use was not made of the scarifier, the bolts and nuts could be taken out and used for the repair of other machines, the iron could be made into swings, and the cast iron taken to a foundry and sold. All the old machinery could be disposed of in that manner. Now that old implements were being discarded and new ones taking their places, a greater acreage could be covered in less time, because the new machines were larger and more easily handled. All the blind stumps on the cultivated land should be grubbed or disposed of in the best way possible, because they were a nuisance when ploughing the land, and were a harbor for white ants and grubs. If weeds commenced to grow after rains, the sheep should be allowed to feed them off, and if the fallow became set before harvest, the cultivator should be used to make it lighter work at seeding time. He preferred a zig-zag type of cultivator for that district. If the fallow was rough, the clod crusher should be used. He would sow early in April if the fallow was fine and dry, and the wheat would then grow rapidly when the rain came, and there would be an abundance of early green feed. When sowing, the drill should cross the watercourse to prevent the soil from washing out in the wheel marks. When the wheat was above the ground the roller should be used, and all the land likely to be cut for hay should be rolled so that the surface would be smooth when using the binder. When the hay was cut it should be stooked and left until the centre sheaves of each stook were brittle and then stacked as quickly as possible and covered with a liberal quantity of straw, or, preferably, stacked in a shed which should be made large enough to hold an 18 months' supply. Before harvesting the crop the machines should be overhauled and taken into the paddock. After going some distance they should be inspected to see that the bearings were taking the oil. Bags of wheat should not be left in the sun, but carted to the market as quickly as possible. After harvest he advised cleaning and pickling all the wheat that was to be used for seed, and storing it in a place that could not be reached by birds. The machines should also be put under cover, and could be overhauled and repaired on wet days. The horses and cattle should be grazed on the stubble paddocks until the best feed had been taken off, and then the sheep should be turned in and left until the stubble was eaten bare. If the farmer had time, a small dam should be sunk in every paddock. When a dam became dry the mud should be scooped out and prepared to receive the next rain. The chaff house, which should be large enough to hold a week's supply, should be erected behind the stable to facilitate feeding. The hay and engine room should be at the end of the chaff house. A farmer should keep enough good working horses for one team, and also breed one or two foals each year to replace the older horses. If the work was behind the tractor should be taken to work in the paddock and hooked on to an implement. The number of stock on the holding should be limited in accordance with the size of the farm. All the sheep would be well bred because they would then bring in a good clip of wool. A number of fowls should also be kept, a special pen being provided for breeding flock. The number of cows should depend on the number of hands to do the work. During the discussion which followed Mr. Ninnes stated that bolts and nuts taken from old machines were rarely of use on new implements because generally they were too large. He also preferred the use of a zigzag cultivator because it left the ground more even. He thought the erection of a hay shed would mean a great saving in hay each year. He did not think a tractor would be as economical as an oil engine, but if a tractor was purchased he thought a No. 6 or 7 chaffcutter would be about the correct size to use. Messrs. C. Kotz, C. W. Davidson, and the Hon. Secretary (G. H. Watkins) also spoke.

WILMINGTON (Average annual rainfall, 18.26in.).

July 12th.—Present: eight members.

How to Prevent Smut.—In the course of a short paper under this title, Mr. J. J. Modystack said the first step in the prevention of smut was to obtain good clean seed. Next, the seed should be thoroughly pickled, and while there were many methods in vogue he gave preference to that of pickling in a keg, using a solution of 1lb. of bluestone dissolved in a kerosine tin of clean water. The wheat in the bag should be immersed in the solution and thoroughly stirred about for three minutes. He made a practice of using 12lbs. of bluestone to about 30 or 33 bags of wheat. The seed should be pickled from one to three days before sowing. In the discussion that followed Mr. J. Hannagan advocated pickling on a floor or in a box, and regarded light pickling of little value. He considered it better to pickle very heavily and kill a portion of seed rather than to pickle lightly and later on reap smut or bunt. He always used 1lb. bluestone to every 3bush. bag of wheat. Other speakers agreed and thought that farmers should exchange seed. Pickling should be done five or six days prior to using the seed, and Mr. George thought that bags for seed should also be steeped into strong pickle to kill the germ or disease.

AMYTON, June 12th.—The Hon. Secretary (Mr. L. N. Mills) read an article from the *Journal of Agriculture*, "Blowflies and Sheep," and a good discussion followed. The meeting also discussed the forthcoming Conference of Upper Northern Branches of the Agricultural Bureau.

MORCHARD, July 8th.—Mr. N. S. Lillicrapp read a paper, "Castration of Livestock." Mr. B. McCallum also read a paper, "The Advantages of Farm Life." Interesting discussions followed the reading of both papers.

MOUNT REMARKABLE, May 18th.—The Chairman (Mr. H. D. Shields) contributed a paper, "Farming Practices in England and Scotland," in which an interesting description was given of the agricultural practices of those countries.

ORROROO, June 10th.—Mr. A. L. Brice contributed a short paper, "Pests." The speaker named the various pests that troubled the agricultural community, and spoke of the huge losses of stock and revenue that were accountable to the ravages of the vermin. The meeting also discussed the forthcoming Conference of Upper Northern Branches of the Agricultural Bureau.

MIDDLE-NORTH DISTRICT.

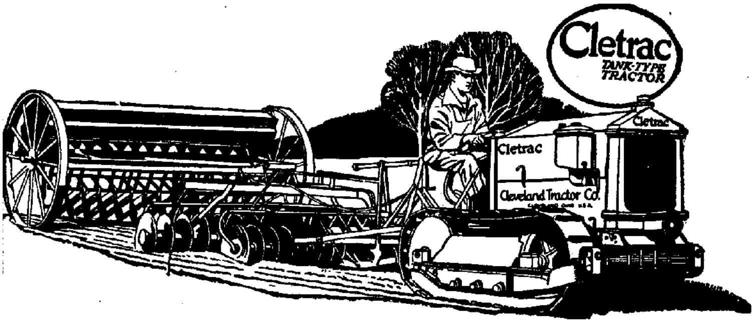
(PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 23.50in.).

July 5th.—Present: 13 members and three visitors.

Currant Growing.—"This is a very suitable district for currant growing, providing the vines receive proper care and attention," said Mr. J. Fradd, in a paper on the above subject. Continuing, the speaker said the vines had been found to grow to advantage on good dark or black soils, the berries growing to a good size and of excellent quality. He suggested that a sufficient area should be planted to enable the grower to employ labor to keep off birds during the ripening season. If that was done the present heavy losses now incurred on the smaller holdings would be reduced to a minimum. The vines should be planted 10ft. or 12ft. apart in rows running north and south where possible. The vines should be cut well back at the time of planting, and during the first year little was done beyond disbudding and keeping the growth of the lower portion of the vine confined to one main shoot. The first winter pruning they should be again cut back to the main shoot and then trellised with good stout 6ft. posts, which should be let into the ground about 20in. or more. Three wires could be used, the first being about 15in. from the ground, the remaining wires being from 15in. to 16in. apart, and all tightly strained. In some cases the "T" trellis was used, but he did not favor that method, as it did not allow sufficient sunlight to get at the fruit. It was also a disadvantage when working the vineyard. During the second winter pruning all the laterals were cut off close to the main leader, the leader being shortened back to good, sound, fully-matured wood. The vines should be tied securely to the wires to prevent swaying and damage to fruit during rough weather. At the third winter pruning, the leader having extended, spurs containing three or four buds were left at a distance of 8in. or 9in. apart. The same system was followed from year to year, always leaving good strong spurs. The length of the leader would depend on the strength of the vine, but the vine should not be allowed to extend too far, otherwise the growth would become weak over the trunk of the vine, where it was important to keep it furnished with good strong fruiting wood. Only strong spurs well spaced should be allowed to remain, and the vine so pruned as to give plenty of light and room for each spur. That would prevent the bunches from being too crowded or shaded by the foliage. When old enough to bear, the vines should be cinctured when they were in bloom or any time until the berries were of a shot-like size. He thought the crops were heaviest when the cincturing was done before the berries were too far advanced. Cincturing was performed by removing a small strip of bark about ⅛in. wide around the trunk of the vine near the ground.

Dairying.—Mr. J. B. Giddings, who read a short paper dealing with this subject, said the place selected for conducting dairying should be one with a good supply of water, to be used for irrigating such fodder crops as lucerne, maize, sorghum, mangolds, kale, &c. Barley and wheat should be sown for early winter feed. Two or three silo pits should be excavated on a hillside so that the dairyman would always have a reserve supply of fodder on hand. A good straw stack should be built in a sheltered spot on the farm. The yards should be erected on a sloping piece of land to provide for drainage and be paved with bricks. Good cows were essential to the success of the undertaking, and these should be mated with an approved bull of the same breed as the cows. He believed it was a mistake to allow the bull to run with the cows, and recommended the testing of all the cows in the herd. Referring to the handling and marketing of the produce, the speaker said the milk should be separated soon after milking; warm cream should not be mixed with that already in the can; and the butter should be made up at least twice a week.



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BLYTH (Average annual rainfall, 16.45in.).

June 4th.—Present: 17 members.

Soursobs.—Mr. H. Neuman, in a short paper, under the heading, "The Best Way to Prevent the Spread of Soursobs," said land on which soursobs were growing should be ploughed to a depth of 3in. as early as possible, and no later than the beginning of August. No time should be lost in giving the land a good harrowing, because if that work was delayed the harrows dragged the small bulbs over the fields, and thereby distributed the plants over a larger area. Any plants that had been missed by previous workings could be destroyed by the cultivator. The speaker was of the opinion that it was a waste of time attempting to deal with the plants until a good rain had been received to germinate the seeds. Where the soursobs were very thick, a thorough working of the land with a cultivator, on a warm day, would destroy a large number of the plants. It would also be advisable to work the harrows after the drill, as there would, no doubt, be a number a plants that would make a fresh start after rain had fallen.

Barley Growing.—In the course of a paper dealing with the subject, "The Best Time to Sow Barley and the Best Quantities of Seed and Super to Use to the Acre," Mr. A. A. Schulz said if the season opened with cold and wet conditions the seed should be sown in May, but should the season be late, a July sowing should give good returns. If the grain was small, but plump and sound, a seeding of 1bush. to the acre should prove sufficient; but for large and coarse seed he suggested sowing 2bush. to the acre. The condition of the soil should also be considered. If the paddock was in good heart and free from weeds, not so much seed would be required to the acre as in a field containing a rank growth of rubbish. One hundredweight of super to the acre should be quite sufficient for their district.

Combined Drill and Cultivator v. Separate Implements.—Mr. W. O. Eime, who contributed a paper on this question, said that arguments could be cited both for and against each method of working the land and drilling in the seed. Where a man had good, clean fallow, and was compelled to work single-handed, the combined implement undoubtedly had its advantages; but in those cases where the farmer had a large area to work, and had hired labor, he favored doing the work with separate implements. He had not had personal experience with the combined implements, but from observations that he had made he thought that in wet weather it would take at least 12 horses to work a large machine, and if the land was at all dirty a very good job would not be made of the drilling. When the land was very wet the working of the cultivator ahead of the drill enabled the farmer to make a good job of his seeding. Another point was that the land sometimes required a deeper working to destroy weeds, and while that could be successfully carried out with the separate implements, the combined machine, to destroy the weeds properly, would have to bury the seed more deeply than was actually required. He would not recommend the purchase of the combined implement to a farmer who had to deal with a large area of country, for the price of that implement was nearly as much as a cultivator and drill, and the farmer would have to engage help to take the seed and super out into the paddock. A good discussion ensued, particularly upon the last subject. The users of the combined implement considered it superior to the separate machines, both as regards costs and standard work performed. On the contrary it was urged that past years had been favorable to the combined drill and cultivator, because there was suficient moisture for deep sowing. For drier conditions, and when there was insufficient moisture to germinate and feed the wheat plant, the drill was recommended after the cultivator to sow at a shallow depth, so that the wheat would lie without danger of malting until a fall of rain.

BLYTH (Average annual rainfall, 16.46in.).

July 1st.—Present: 14 members.

Several interesting subjects were brought before the meeting. In reply to a question, "Is the use of resin detrimental to belting?" Mr. A. L. McEwin considered resin applied as a paste by melting and mixing with pure mutton fat was a good dressing to prevent slipping. It also acted as a preservative to the leather. Messrs. A. L. McEwin, jun., and J. S. McEwin favored keeping belting oiled, and using leathered pulleys on harvesting machinery.

PORT BROUGHTON (Average annual rainfall, 14.44in.).

June 16th.—Present: 10 members.

FALLOWING.—Mr. W. Wall contributed a paper on this subject. Farmers fallowed their land, he said, chiefly for two reasons, viz., to keep the moisture in the ground for the next crop, and secondly, to clear the land of the weeds that otherwise would choke the crop. In his opinion, it was of the utmost importance for the farmer to fallow early, and not allow the weeds to get too much start, because they were then generally the worst trouble to overcome, because the plough would not cover them. The main point in fallowing was to get the surface of the ground fine enough to retain the moisture. There was always a great amount of diverse opinion as to whether it was advisable to crop and fallow the land each alternate year, or whether the best results were obtained from spelling the land for one year and then fallowing and cropping, thereby cropping every third year. He mentioned that he fallowed a paddock which had been cropped during the previous year with oats, skim-ploughed it early in May, and kept it worked with harrows and a scarifier until it had been worked to a fine surface, and then sowed a crop of wheat in May. The paddock received a good start with rain, with the result that he reaped a 28bush. crop. On another occasion he left the same land in grass for one year, and then fallowed, and cropped it the next year, but the season was not a good one, so he fed it down, and fallowed it again ready for the next crop. The season was a good one, and the crop grew well, but it did not yield so well as the year when it had received only one season's spell. That had always been his experience. Land had always given a better yield when it was cropped every other year. When the land was left under grass for a year, not only did it make it doubly hard to kill the weeds, but the farmer by cropping every third year would have produced 50 per cent. less wheat compared with the farmer who cropped every alternate year. A good discussion followed.

REDHILL (Average annual rainfall, 16.79in.)

July 11th.—Present: 10 members.

WHEAT SELECTION.—Mr. F. A. Wheaton read the following paper:—"That farmers do not pay sufficient attention to the selection of seed wheats cannot be denied, and while it may be admitted that we do try to obtain those varieties which have been giving best returns for the last year or two, this is not going far enough. We do not take sufficient consideration of wheats that have yielded consistently over a given period of years, but more often we look back at the results of the past two, three, and perhaps four years. Then, again, we can call to mind varieties that have done well for a long number of years, yet some are still popular, while others are losing favor. Further, since the advent of superphosphate, our varieties have changed; but do we pay sufficient attention to the fact that our methods of cultivation have improved beyond measure? Again, when once we have decided upon certain varieties, are we particular enough in choosing our seed? These are points which naturally crop up in the mind of every Bureau member in a wheat-growing area. Selection of seed from last few crops.—Why should we base our faith for a good crop on a variety which has yielded well for a few years, and put all our apples in one bag. In this connection I should like to mention two varieties which were extensively sown in this district last year, Late Gluyas and Currawa, both very good wheats. Late Gluyas was more or less disappointing, while Currawa more than held its reputation. What has been the position this seeding? More Currawa has been sown, while Late Gluyas has declined in favor. Is there not the possibility of last season's results being reversed this year; Late Gluyas may yield abundantly, and Currawa go back? It is right to seed a good percentage of our crop with a variety which we have proved for a number of years, but is it not good husbandry to have one or two other varieties in the event of the season not being favorable to our main wheat? Varieties which have been popular for many years, some holding their own, others failing.—In this connection I should like to instance two varieties, King's Early—from which selections have been made—and Marshall's No. 3. The former is not extensively grown in this district, but in many parts of the State it is very popular. The latter, Marshall's No. 3, is going out, but both varieties have been grown for many years. The question is, why should one be popular and the other lose favor? Herein lies one of the advantages of proper selection. King's is a wheat which has been extensively selected at Roseworthy Agricultural College. It has been kept true to type and improved. Marshall's, on the other hand, is a wheat which did not suit Roseworthy soils, and was not grown so extensively. Nevertheless, the College in 1905 secured a sample of Marshall's from Wandearah. That sample was sown, and from it eight different varieties, including a bearded one, were grown. The College and the officers of agriculture have done much for the furtherance of agriculture in this State, by reason of the great work which has been done in connection with the improvement of seed wheats. Last seeding I was dissatisfied with my Marshall's seed—which had been procured locally a year or two previously—and decided to secure some seed from a Government Farm. The result was astonishing. The Government Farm seed yielded two bags per acre in excess of the old seed. The two plots were sown within a few days, and no rain intervened. The growth of straw, on appearance, was about equal, but the heads were much different. These two wheats are, to my mind, shining examples of what selection means to us. The advent of super and improved cultivation.—It is not many years ago that 12bush. to 15bush. was a handsome crop. Some of you will have read in the last issue of the *Journal of Agriculture* of the crops grown at Roseworthy Agricultural College on manured and unmanured plots since 1908. The difference of grain yield is approximately 6bush. per acre. This, then, will represent the advantage of super. But our yields have increased much more than that 6bush. Improved methods of cultivation have yielded another 6bush. at the least, and it is natural that with our improved methods we will have to grow wheats which will respond to the different treatment of the land. Having decided upon certain varieties, are we particular enough in the choice of those varieties? How many of us deserve commendation for the manner in which we choose and prepare our own seed? To my mind we could make better use of our land if we paid a little extra for pure seed and made more use of the grader. This is something which a farmer can do for himself. Grading is certainly a slow and expensive process when we consider the cost of labor involved, but say that grading costs 1s. per bushel—which is a very high estimate—it will be amply repaid if we have a 1bush. increase per acre. Selection of seed wheat is one phase of agriculture upon which we can all improve, and can keep on improving.'' A good discussion followed.

WIRRABARA (Average annual rainfall, 18.91in.).

June 10th.—Present: 20 members.

HAY STAGING.—Mr. R. M. Obst, who read a paper under the title, ''The Cost and Benefits of Building a Stage,'' said on the majority of farms the hay, after being cut and carted, was stacked on the ground, after dunnage of some description had been laid for the foundation. The speaker spoke very strongly against that practice, for he considered that the damage done to the hay by mice and rats every season would, in the course of a few years, more than repay for the erection of hay staging. To erect staging to carry a 100-ton stack of hay the following material would be required:—48 posts, 4ft. by 4in. by 6in., costing £2; 16 cross-pieces of timber, each 16ft. by 5in. or 6in. in diameter, £2; and 260 pieces of timber, 6½ft. in length and 3in. or 4in. in diameter, to form the floor of the stage, £3. Cartage of timber and erection of stage, £4. Forty-eight tins at 3d. each would be required, making a total of £11 12s. for the stage. Regarding the selection of the site, the speaker said the stage should not be erected on any place where water gathered during the wet season. If that was done, there would be a danger of the staging sinking. Next three holes, each 6ft. apart, for the width of the stack, and 16 holes, 6ft. apart, for the length of the stack, should be excavated. After the posts had been put in and carefully rammed, a tin, with the opened end placed over the top of the post, should be placed over every post. Care should be taken to see that the bottom end of the tin did not touch any part of the staging. Then one rail should be so placed, crossways, on each of the three posts that 2ft. of timber projected over the side of the platform. Finally the floor or dunnage could be laid on the supports. After the hay had been placed on the staging, all loose hay and rubbish should be removed from the sides of the stack, so that the mice and rats could not gain admittance to the hay. Similar structures could be erected on which to store seed wheat, &c. A good discussion followed, in which Messrs. Jericho, Hollitt, Stephens, Woodland, Stead, and Stevens took part.

BLOCK E.—July 4th.—Mr. C. L. Ashendon read an article, "Use of Gypsum," and an interesting discussion followed. The delegates were appointed to attend the 1922 Annual Congress.

BUNDALEER SPRINGS, July 3rd.—The Superintendent of Experimental Work (Mr. W. J. Spafford) attended the meeting, and delivered an address, "Lucerne Growing."

GLADSTONE, July 5th.—The meeting took the form of a social gathering. The Chairman (Mr. F. Pitman) gave an interesting address outlining the objects of the Bureau, and invited the farmers in the district to join the local Branch.

LAURA, June 12th.—The Wool Instructor of the School of Mines (Mr. A. H. Codrington) attended the meeting and delivered an address, "Wool Classing and Production in Certain Types of Sheep."

NARRIDY, June.—An interesting discussion took place on the subject, "Wheat Pickling," when it was generally agreed that a solution of 1lb. of bluestone dissolved in 10galls. of water was of sufficient strength to destroy the spores of the disease.

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Floriculture (plants in pots) ..	Wednesday, Sept. 6, at 4 p.m.

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J. A. RILEY, Secretary, 23, Waymouth Street.

LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

BLACK SPRINGS.

June 6th.—Present: 23 members.

Care and Management of Horses.—In the course of a paper under the heading, "The Horse Reigns Supreme," Mr. J. Y. Hudd said one frequently heard it stated that the horse had outlived his usefulness so far as a means of locomotion and haulage were concerned, but the fact that many of the large business concerns in London were disposing of their motor vehicles and reverting to the use of horses should prove that horses were going to increase in value. Regarding the treatment of the animals, the speaker first referred to the horses that were used for light vehicular work on the farm. Too often the horse was brought in from the paddock and put straight into the trap or buggy, even when the animal had to make a long journey. It was a much better practice to allow the horse to have at least a quarter of an hour's feed before it commenced work. He spoke very strongly against the hard jerking of the horses' mouths, which was too frequently practised by many drivers. A liberal supply of water played a very important part in the general health of the horse, and even if the animal's dinner hour had to be reduced by 10 minutes, the speaker thought it a good plan to give the animal an opportunity of having a drink. The horse should be broken in when a colt, for a better job of breaking in could be made with the raw and uneducated animal, and the nature of the after life of the animal would be very largely influenced by the way in which he was handled during the breaking-in period. The speaker did not think it was necessary to use a crush pen for the work. He considered it much better to use patience and the whip in bringing the animal to face its master in the yard. After a halter and bit had been placed on the colt, the bitting tackle should be attached. In the absence of proper bitting harness he recommended the use of an old sulky saddle for that purpose. If that was done for a couple of days in succession, one could safely reckon the colt properly mouthed. Next, the colt should be lunged around the yard, after which a flank rope should be used to teach the colt not to kick anything that came into contact with his legs. He should then be harnessed to a log and taught to pull. After having such an education the colt should be ready for the team. The teamster should always keep his temper, and treat the horses with kindness.

LONE PINE.

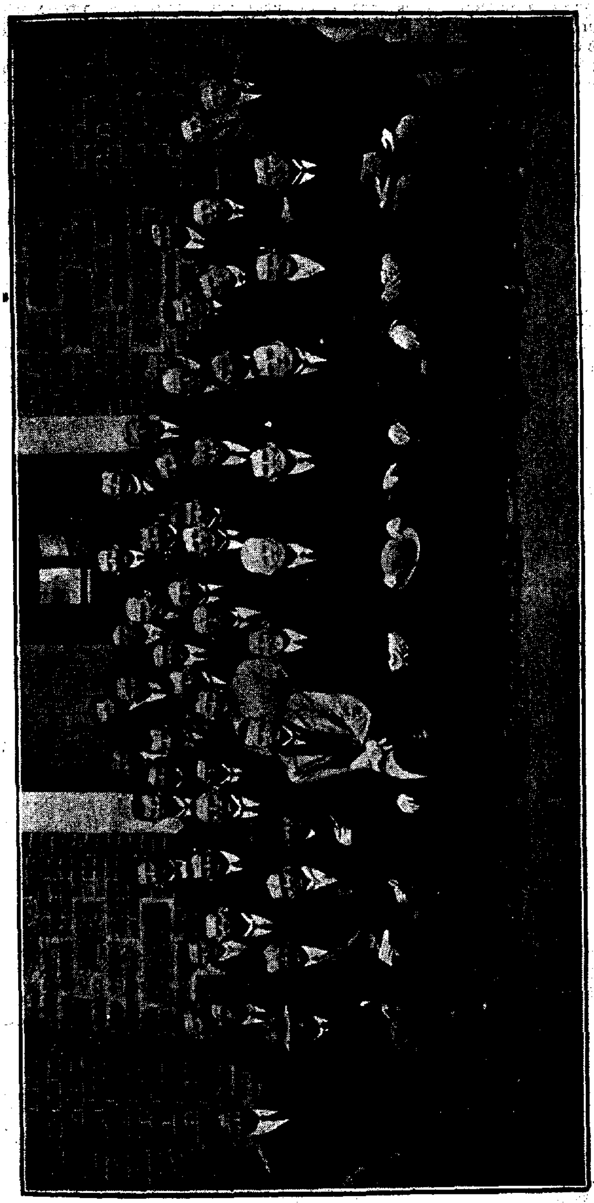
June 6th.—Present: 17 members and two visitors.

Pigs for Profit.—Mr. E. Minge, who read a paper on this subject, said it was generally recognised that the pig on the farm was the food consumed. The selection of young sows was one of the most difficult problems that the breeder was up against, but it was less difficult to pick out the worthless animals after the first litter or two. In case the pig did not turn out as was expected, it should be fattened for killing. Some breeders relied upon the pedigree, but that alone would not make a good pig. After selecting a well-bred and well-developed animal, care should be taken to give it clean living quarters, and plenty of feed at regular intervals. If kept in a dirty sty, and given unsuitable food at irregular periods, the pig would not thrive. Little pigs should not be given food of too rich a nature. Food for fattening pigs, such as grain, vegetables, etc., should be boiled before feeding. An addition of pollard would make a rapid fattening mixture. An interesting discussion followed.

MALLALA (Average annual rainfall, 16.88in.).

June 19th.—Present: nine members.

Lambs for the Export Market.—Mr. K. C. Catt read the following paper:—"In the breeding of fat lambs suitable for the export market to England and the Continent, the carcase which is suitable for that trade is the lamb from a crossbred ewe by an English ram. There are a number of crossbreds of the long-woolled sheep, such as the Merino-cross Lincoln, Merino-cross English Leicester, Merino-cross Border Leicester, and the Merino-cross Romney Marsh; and of the short wools, the Merino-cross Dorset Horn, Merino-cross Shropshire, and Merino-cross South Down. The reasons for using crossbred ewes are that they are more symmetrical and larger and stronger than the pure-bred Merino, and they impart those characteristics to their lambs, which are consequently of a finer type.



The Minister of Agriculture, Officers of the Department and Farmers who Attended the Second Winter School for Farmers at the Roseworthy Agricultural College.

Neither does the crossbred ewe's fleece suffer so much as a Merino when she is carrying a large lamb. It is important to note that a ewe which is ready to lamb two or three weeks earlier than another is infinitely more profitable, because as a rule early prices are the best, and again the earlier that lambs get away the more profitable it is, because the breeder can carry more stock, and the mothers can be fattened off. This is a point to be guarded against with breeding ewes, as it sometimes depreciates their breeding capacity, and they may be difficult to get in lamb. The Merino-cross Lincoln is probably the most popular cross, and is perhaps the best, but the lambs require good grass country. Crosses in the Leicester will do on poorer country than is required for Lincolns, while the Romney Marsh are most suitable for wet, marshy, cold, and sour country. Of the crosses made by the short-woolled breeds, the Dorset Horn is probably the best, and is one of the best mothers. These sheep have a large frame, they are hardy, and rear fine large lambs. Their fleece is the lightest of any of the crossbreds, but they will thrive under very unfavorable conditions. From these crosses for a district such as ours the Leicester, Lincoln, or Dorset Horn should prove the most suitable. The points desirable in a ewe may be summarised as follows:—(1) A ewe most suitable to climatic conditions; (2) most suitable to farm practices, *i.e.*, to graze contentedly in small fields; (3) one capable of producing vigorous and early maturing lambs of good quality; (4) the ewe must be a deep milker and a good mother; (5) able to fatten off quickly when due for casting, and, finally, she should carry a profitable fleece. Having in mind the type of ewe that has been selected, the next and most important step is the choice of the ram. In the ram, special attention should be paid to the qualities that make for a good type of lamb. The ram confers early maturity on the lamb, shapliness of carcase, and good quality of flesh; therefore it is evident that the Merino ram is unsuitable, and a selection must be made from the English breeds. Of the long wools, the English Leicester is perhaps the best. In the short wools, the Dorset Horn has a special claim on account of the early maturity of its lambs. The Shropshire has many good points—its good symmetrical carcase and early maturity qualities, but its one defect is that it tends to become woolly about the eyes. There is also the South Down, which is especially prized by some breeders of export lambs. The next point is the time of mating. A ewe takes from 20 weeks to 22 weeks, and sometimes 23 weeks, for its period of gestation. It comes on heat every 13 days to 18 days, and the period lasts from 24 hours to 28 hours, so that for lambs to come at the end of March or the beginning of April one must introduce the ram to the flock at the beginning of November, and at the rate of one ram to every 50 ewes to 60 ewes. The lamb will be found to thrive best on good natural pasture and plenty of mother's milk, and it is after the lambs have been dropped that breeders often fail to pay close attention to the flock. I should like to introduce handfeeding at this stage, because it is in this portion of the business that I believe the farmer could make good profit for himself, and also tend to stabilise the meat market. Many fodders can be used for this purpose, such as lucerne hay, wheaten and oaten hay, chaff, bran, and grains, such as oats, maize, and wheat. Other fodders, including rape, kale, peas, cocky chaff, &c., can, if collected, be utilised in rations. In some cases these foods can be made a complete ration in themselves to fatten lambs, and would enable the farmer to carry increased numbers of stock, which would not only enrich his fields, but would also add to the revenue from the property."

NANTAWARRA, July 6th.—Several items were brought forward for discussion. Mr. S. L. Herbert wanted to know of a good, but inexpensive, floor for pigsty. Mr. C. G. Nicholls said he had known old sleepers to stand for about 20 years. Mr. A. F. Herbert said cobble stones set in cement would last for a long time, but he doubted whether such would be considered inexpensive. The officers were then elected for the forthcoming year.

SALISBURY, July 4th.—Mr. J. C. Weatherell contributed a paper, "Clover and Grass Pastures," and an interesting discussion followed. The officers were also elected for the ensuing year.

TARLEE, June 6th.—The Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis) attended the meeting and delivered an address, "The Work of the Agricultural Bureau," to a gathering of 26 members.

WATERVALE, July 3rd.—The meeting took the form of a discussion on the subject, "Insect Pests." Various other matters of local interest were also brought before the meeting, and the officers were elected for the ensuing year.

WILLIAMSTOWN (Womens'), July 5th.—The meeting took the form of an "Exchange Afternoon," when members exchanged recipes and discussed various questions of domestic economy. The officers for the ensuing year were then elected.

WILLIAMSTOWN, July 7th.—The Chairman (Mr. J. H. Mitchell) read a paper, "The Planting of an Orchard," and an interesting discussion followed. The report of the work performed by the Branch during the past year was presented by the Hon. Secretary (Mr. G. Brown), and the officers were elected for the forthcoming year.

WINDSOR, July 11th.—The Government Poultry Expert (Mr. D. F. Laurie) visited the Branch, and delivered an address, "Poultry Keeping." The annual meeting was held on July 4th, when the officers were elected for the ensuing year.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

BRENTWOOD.

June 15th.—Present: 17 members and three visitors.

AFFORESTATION.—The following paper was read by Mr. J. Boundy:—This subject of afforestation is one that is taxing the minds of some of the most thoughtful men of our time, and the ruthless destruction of the natural timber forests is even at this early stage in our history giving grave cause for alarm to all farseeing

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men. Practically all of the older established countries have had to carry out a most vigorous system of reafforestation to enable them to keep the supply anywhere near the demand. The use of timber in most of these countries is much greater than the supply, so that they are in the position of having to import timber. The pinch is being felt even now in our settled districts for firewood and fencing posts. Even in our own district we hear farmers complaining that they do not know from where they are going to obtain their fencing posts. In a district like this the only logical answer should be grow them, by planting rough or waste lands with trees. There are any amount of trees that will grow in this limestone country if they are only planted, protected, and given a fair chance. We will, as a country in years to come, be importing timber unless a vigorous system of reafforestation is carried out right throughout our settled districts. Timber growing of either indigenous or imported trees suitable for the locality could be adopted with profit on many of the waste patches which are at present of no use. The growth of indigenous trees could be encouraged by fencing off tracts unsuitable for agriculture from stock and rabbits. In a few years there would spring up a growth of young timber that would well repay the initial outlay, and even whilst the natural growth of mallee and ti-tree is becoming less each year, we see as yet no effort being made at reafforestation. A good plan would be to plant some of the trees which are of commercial value on the places unfit for agriculture. When a new district is opened, much timber is ruthlessly destroyed that would be of great value on the farm as breakwinds, shelter, &c., and it is no uncommon sight to see farms that have been practically denuded of timber through this shortsighted policy. Again, trees have much value from the ornamental standpoint as well as the utility viewpoint. Trees of an ornamental nature greatly enhance the value of a place, and every man should, as his duty to mankind, try to leave the world better than he finds it. What better method of leaving a legacy to future generations than that of planting sufficient quantities of timber of commercial value? There should be no excuse for not planting, as the Forestry Department gives away yearly quantities of trees to be planted by all those who make application. We, as members of an Agricultural Bureau, should agitate for greater State forests and for the district councils to take up this matter of afforestation. Every individual can do his or her share by planting those trees which he has the room to grow. The difficulty in this is that trees take so long to mature, but it has been proved beyond doubt that forestry does pay, and that handsomely, if carried out intelligently. It has been found in natural forest countries that it pays much better to forest farm than it does to use the land for ordinary agricultural purposes. Mr. J. J. Honner, in opening the discussion, said that although more could be done in the matter of treeplanting, yet the position in his opinion was not an alarming one, as substitutes would be found for timber, the same as for other things if the shortage became acute. For instance, concrete was now used extensively in place of timber for constructive works. He considered the matter not an individual problem, but a national one. He did not believe that forests affected the rainfall of a country. Mr. F. L. Carmichael said there were large areas in South Australia denuded of timber. He agreed that more should be done by the State as well as by individual landholders. Mr. A. E. Twartz thought that more could be done in encouraging afforestation, and he considered that although Yorke Peninsula might not be suitable for growing timbers of commercial value, yet more could be done in growing trees for posts and for ornamental purposes. He quoted suitable areas in Australia where timber could be grown for commercial and national benefit. Mr. Boundy then replied.

KILKERRAN.

May 11th.—Present: 10 members.

Care of Machinery.—Mr. A. Wakefield, who contributed a short paper on this subject, said implements and machinery were expensive items in fitting out the farm, and the farmer should give them every care and attention. The erection of a shed was of first importance to keep the implements away from the effects of the weather when not in use. Machines such as the harvester, binder, and drill should be regularly oiled with the correct type of lubricant when working in the fields. Loose bolts, he stated, were one of the main causes of broken parts, and the farmer would be well advised to see that all nuts and bolts were fastened tightly in their places. The lower speed machines, such as the plough, cultivator, &c., did not require so much attention, but it should be seen that the shares were sharp, and the axles regularly oiled.

At a further meeting, held on June 13th, Mr. B. J. Koch contributed a paper, "The Motor Car on the Farm," in which he told of the variety of jobs the motor could be called upon to perform, and so effect a considerable saving of time to the farmer. An interesting discussion followed, in which Messrs. Geater, Heinrich, Keightly, and B. A. Koch took part.

MOONTA (Average annual rainfall, 15.22in.).

June 10th.—Present: 12 members.

Rats and Mice.—Mr. H. J. Cadd contributed a paper on this subject. Owing to the exceptionally mild climate, he said, mice could live in the fields about 10 months of the year. The farms were producing heavier crops, and it frequently followed that there was more food left in the fields. That, of course, formed a breeding ground for mice, over which the farmers had no control. A time came, however, when a raid could be made on the mice, and that was during the winter, when they came into the barns and stacks for food and protection. The best means of checking both rats and mice was to build vermin-proof barns and sheds, and to fence stacks securely with galvanized iron. The time would probably come when it would be necessary for every farmer to adopt that course. When it was not convenient to erect vermin-proof barns, &c., much waste could be prevented by carefully stacking the seed. Where space permitted, a safe way of stacking was to stand the bags upright and in rows, preferably two bags high. If that plan was adopted, the cats could move freely among the bags. That system of stacking also answered well with super. A great number of mice could be poisoned in the barns and haystacks by placing poisoned wheat in or under the empty bags. He

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also had achieved a great deal of success by placing poisoned wheat about the haystacks. The rats had proved that they had come to stay, and, unless checked, would multiply rapidly, and do a great deal of damage to grain, haystacks, or anything they could possibly eat. There appeared to be only one way to cope with rats, and that was to carry on a constant raid, and make certain that there were no dark corners about the buildings to harbor the vermin. Board floors, sheep gratings, and straw covers to sheds offered ideal breeding places for rats. The farmer should be continually trapping, poisoning, and shooting, and it was only by those methods that he could hope to keep the pest in check. If these methods were carried out, the farmers would save quite a considerable amount each year, even though poison, traps, time, &c., might cost, say, £10 per year. He suggested keeping plenty of cats; it would pay to feed them in the season when mice were not plentiful. A good discussion followed the reading of the paper.

PASKEVILLE (Average annual rainfall, 16.10in.).

July 4th.—Present: 11 members and visitors.

Care and Treatment of the Horse.—The Hon. Secretary (Mr. J. Prouse) read the following paper:—"Not only is the horse one of the finest and noblest of animals, but to many he is the principal means of their livelihood and success. To the man on the land he is invaluable, and this paper applies more particularly to the farmer's horse. Means have been tried whereby the horse may be displaced, but he is still with us, and, in my opinion, will continue to hold that important position for some time to come. As a large percentage of people live on the producer to a very great extent, either directly or indirectly, it will be seen what a valuable asset the horse is to many. Perhaps it will be as well to follow him from birth, for at all times he is worthy of attention, and neglect at this particular time may mean death of the foal and also the mother. When satisfied that everything is well, our attention relaxes somewhat, for we know under ordinary circumstances the mother will look after the youngster, and provide for him for the next few months. There soon comes a time, however, when the mare is required for work again, and it is then, I think, the young horse should receive greater attention. I think it inadvisable to let the foal follow the mother at work. It should be put in a stable provided for that purpose, and properly fed and watered. Whether the foal should be handled or not is a matter of opinion, but, personally, I should say a little handling would do him no harm, and would assist very materially at a later stage when the time comes for him to work. It is always wise to keep him in the stable at the weaning period; no good can ever result by turning him out in the pasture with other stock to provide for himself. It is essential, at all times, to keep him growing, and this can only be achieved by keeping him in good condition. Time is well spent in providing a stack of good straw in the paddock; it provides both food and shelter. Some prefer breaking the colt in at two years, but I prefer handling the colt when three years or four years old. The young horse needs careful handling, and should be properly mouthed, taught to lead, and answer the rein before being attached to the team. For a time half-days would be sufficient for him, and he should not be expected to take his place against the horse of older years in constant work. Special care should be given the collar to ensure its perfect fit, and when this is accomplished it should be kept for him. The shoulders should be examined for scalding, for sometimes this happens, and although there are many ways and remedies for treating scald or sore shoulder, the simplest and most inexpensive, and at the same time effective, is cold water. This, if applied when the shoulder is hot, not only prevents scald, but will effect a complete cure, when other remedies have failed, and the horse is kept in constant work. At seeding, the horse should cease work at sundown; this gives the sweat a chance of drying off, which otherwise may be wet on him the next morning. Always keep a good curry comb and brush in the stable, and never neglect to use it. I feel sure that the time has arrived when every man growing hay for feed should have the stack protected by a mouse-proof fence. This not only provides clean, wholesome food, but is a saving to the farmer himself; the cost is not great, and would more than meet the expense in one year. The stack should also be thatched. If mousey hay has to be fed, it is well to toss it about to free it from mice leavings, and leave it exposed to the air for at least 24 hours before chaffing, and, when fed, a liberal amount of oats and molasses should be mixed with it. A good stable should be the aim of every man with horses, for often the horse suffers more from exposure than the work he has to perform. He is worthy of a good stone stable, and care should be exercised in its construction to guard as much as possible against the cold winds. For a man with a fair number of horses, a stable built L-shaped would be preferable to a long stable, because shelter would be provided on two sides. It should be stone paved and graded to carry off the water; also cleaned frequently and kept as dry as possible. With few exceptions very little whip is needed if the horse is fed well and not overworked. When he can no longer keep up his end through old age or any other infirmity, he should be pensioned off with light work and plenty of good feed, care being taken to see that his teeth are attended to. When he has run his course, and there is no further hope, I think it would be more humane to give him a merciful bullet to help him off rather than turn him out in the paddock to die."

WEAVERS.

July 3rd.—Present: 13 members.

Feeding and Care of Horses.—The chairman (Mr. A. P. Piggott) contributed a paper on this subject. The most important and the most valuable stock on the farm were the horses, he said. It was therefore necessary to see that they received good food. He was of the opinion that oaten hay, if cut at the right time, or when it was just commencing to turn brown, was the best food for horses. Wheaten hay, if too ripe, was liable to scour them—it should be cut just after the flower had fallen. The hay should be stooked after lying for half a day, and should be carted in a fortnight later and well stacked and covered from the rain. In his opinion it paid to chaff the hay. The feeding

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of the horses should be carried out regularly. Chaff should be fed to them in the morning, at dinner time, and when coming in from work. A manger could be erected around the stack yard, from which long hay could be fed. If a horse was allowed to go too long without food it was liable to eat too fast, and would therefore not get the proper nourishment from the fodder. Small feeds should be given at frequent intervals, because the horse was only able to digest a small quantity at a time. If the horses were doing hard work they should be given a greater quantity of food, and not allowed to go on to green food. A small quantity of bran in the feed would help to keep their bowels in order. He advised either crushing or boiling corn before feeding, in order that the horse might obtain all the nourishment from it. If there were a large number of animals on the farm, two stables should be erected, so that the best horses could be kept apart from the remainder, and the poorer animals could be fed with better food. He advised the use of the comb and brush at least twice a week, the stables also should be kept clean. The collars should be attended to regularly, and all dry sweat and dirt removed. A bran bag should be used to relieve sore shoulders. A stack of hay and a stack of straw were a great asset on a farm, because in lean years the farmer could make a good ration by chaffing one sheaf of straw with two sheaves of hay. During the cold weather the young stock would do well if fed on straw. In the discussion which followed Mr. Cornish stated that he would feed wheaten hay alone, because the oats make the ration too heating. The majority of members did not favor boiling corn before feeding, because it generally made horses put on superfluous fat instead of carrying a good working condition. Mr. Cornish thought that too little attention was paid to brushing and grooming of the horses. Mr. J. Sherriff thought that with large teams, unless a considerable amount of long hay was fed, the chaffcutter would have to be kept going constantly.

ARTHURTON, June 15th.—Members discussed at length the loss of sheep in this district during the end of April and beginning of May. Some owners had lost up to 30 in less than two weeks. Members were generally agreed that the deaths were due to the sheep eating stinkwort during the wet weather.

MAITLAND, July 6th.—Interesting discussions took place on the subjects, "Best Grasses and Clovers to Cultivate for Feed," and "Farm Competitions." The annual report was presented, and the officers were elected for the ensuing year.

WESTERN DISTRICT.

COORABIE.

June 10th.

Annual Meeting.—The annual meeting was held on June 10th, when the Hon. Secretary (Mr. H. V. Hobbs) presented the annual report, and the officers were elected for the ensuing term. A discussion also took place on the subject "Classing of Farmers' Clips."

Mr. W. J. Spafford (Superintendent Experimental Work), Mr. R. H. Macindoe, B.V.Sc., M.R.C.V.S. (Government Veterinary Surgeon), and Mr. H. J. Finnis (Secretary of the Advisory Board of Agriculture) attended a previous meeting and delivered addresses on various phases of agriculture. In the afternoon a veterinary demonstration was given by Mr. Macindoe.

ELBOW HILL (Average annual rainfall, 11in. to 12in.).

June 13th.—Present: nine members and four visitors.

The Boy on the Farm.—Messrs. J. Williams and T. Wildman read papers dealing with this subject. Both writers stressed the necessity for encouraging the boy to take an early interest in the farm by giving him a small share in the profits and also allowing him time off for amusements, &c. Mr. Wildman thought that if the boy showed a lively interest in horses he should be allowed to take a team, not forgetting to teach him to be careful and thorough with his work. He considered it a mistake to leave the odd jobs to the boy, as such work was uninteresting. Mr. Williams thought it a good plan to educate the boys on agricultural lines by giving them literature to read, such as the *Agricultural Journal*, &c. A very keen discussion followed the reading of the papers. Mr. Wardle thought the boy should be taken into the home, and treated as one of the family. Mr. H. Wheeler was of the opinion that the failure of many men on the farm was largely due to the lack of proper training while they were boys. Mr. P. Wheeler thought more attention should be paid to educating the boys along scientific agricultural lines, teaching them to be thorough and careful with everything. He favored putting the boys on the team so long as they proved themselves capable. Mr. Cowley spoke of the natural instincts of young people for sport and amusement. He thought amusement, such as a piano or gramaphone, should be provided when possible, and that every centre should have its football, tennis, and cricket clubs. If those things were not provided locally, the young people would naturally drift to the bigger centres in search of them.

Fallowing.—At a further meeting, held on July 11th, Mr. D. Watson read a paper on this subject, in which he stated that fallowing should be commenced as soon as possible after seeding. In their light soils he advised the use of a light twin plough, in order to get over the ground quickly. The harrows should follow the plough and be used again after early rains. He did not advise the

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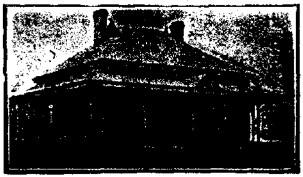

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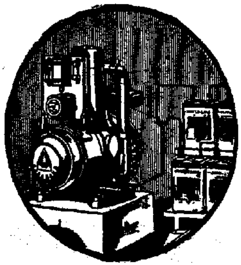

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use of the cultivator unless the ground became dirty or hard. Ploughing to a depth of 3in. on firm ground and less on lighter ground was recommended. Where there was a lot of rubbish to deal with a disc plough should be brought into use. Fallow should be sown during May if possible, and worked with cultivator in the autumn if wet conditions prevailed, but the seed should not be sown until after rain. A very keen discussion followed the reading of this paper. Mr. Williams was of the opinion that the main essential was ploughing well in the first place and turning the surface right under, and advised the use of long mouldboards for that purpose. He did not like the disc implement, because it was most necessary that the land should be consolidated. He favored keeping the sheep on fallow and harrowing as much as possible. In stiff ground Mr. Cooper said he would plough not less than 3in., and follow it up with the cultivator, shallower than the ploughing, and harrowing after every rain. Mr. S. Wake thought fallowing should be done as soon as possible after seeding. Mr. H. Wheeler thought the main point was getting over the ground quickly, even if not done too well at first. He favored shallow ploughing and working the land well afterwards with the cultivator. Mr. P. Wheeler thought it necessary to turn the surface right over, and advised shallow ploughing. Mr. E. Story did not favor deep ploughing, as he thought it encouraged take-all. Mr. Cowley favored fairly deep ploughing in heavy soil, but shallow in light soil. He would plough as much wet land as possible, in order to prevent drift. Mr. Watson asked members what was the best time to sow fallow. Members generally agreed the most suitable time was from the middle of April to the middle of May, and not before rain had fallen.

GREEN PATCH (Average annual rainfall, 26.56in.).

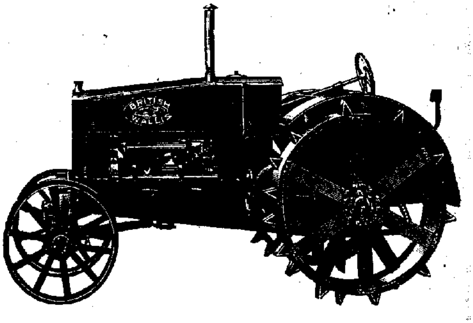
July 10th.—Present: seven members.

SHEARING.—The Hon. Secretary (Mr. R. L. C. Sinclair), in the course of a paper dealing with this subject, said first attention should be given to the shears, for it was impossible to do good work unless the shears were sharpened and properly set. An amateur should not touch the shears other than to file down a place for the leather knocker. To sharpen the shears the point of the blade should be placed on a peg or on the knee of the operator, and the sharpening stone rubbed to and fro along the blade, care being taken to see that a proper edge was made on the shears. It would also be necessary to gradually raise the hand holding the stone until it touched the edge of the blade. It might also be found necessary to put the shears on the grindstone to take off the shoulder of the shears, but on no account should the stone be allowed to touch the edges of the blades, for if that happened they would gap very easily. The points of the shears should also be rubbed off to prevent them from picking up the skin of the animal. The sheep should be held comfortably, not as in a vice, but just sufficiently firmly to let the animal know that the shearer had it under control. The sheep should be taken from the pen by the hind leg, and when brought to the board set up on its hind legs. The paper then read as follows:—"Place the two front legs of the sheep under your left arm, and when that is done the belly wool can be removed, taking care not to cut off the pizzle, or if an ewe, be careful not to nip off a teat. After the belly wool is removed, the inside of the hind legs must be cleaned. That done, let the sheep lean slightly towards you, so that the outside of the near hind leg can be cleaned. Next it will be necessary to go up the neck, and to do this place your right leg between the sheep's four legs, at the same time turning the sheep's neck towards your left leg. It will then be very easy to shear up the neck, coming out just below the off ear. When this is done it is easy to shear the near side. Be sure to shear well over the tail. You then commence the last side. This is done by placing your left leg over the sheep's off shoulder, then let the sheep lean towards your leg. When the shoulder is cleaned, you place both of your legs together and draw the sheep towards you. Any amateur can then finish the job. Whilst shearing a sheep be careful not to stand on the wool, as it is apt to discolor the fleece. Second cuts should be avoided, for they not not reduce the price of the wool, but that wool will be lost from next clip, and is of no value. If left on the sheep it will be taken off next shearing, and then be valuable. In conclusion, I would advise the amateur not to try and shear too quickly at the beginning. It is far better to go slow. Do not be afraid to push the shears into the wool, so that you are cutting with the full length of the blades."

MILTALIE (Average annual rainfall, 14.55in.).

June 10th.—Present: 11 members and four visitors.

Sheep Breeding and Management.—The monthly meeting of the Branch was held at Mr. J. P. Storey's residence, when a paper under the heading, "Sheep Most Suitable for Our Hilly Districts," was read by Mr. F. Jacobs. The speaker expressed the opinion that a West Coast type of ewe crossed with a large-framed and strong-woolled ram produced a type of sheep that was eminently suited to the hills around Miltalie. He also thought that farmers were crossing the sheep with too many different breeds, and that the standard of the local flocks was deteriorating. Breeding solely for fine wool, he considered, resulted in the frame and constitution of the sheep suffering to a large degree. In addition to that, the fine and dense wool harbored the blowfly more than a strong wool. It was his opinion that a ewe should not be used for breeding until she was at least a six-toothed animal. If the ewes were mated when very young, it stunted their constitutions, and that he believed was the reason for many of the deaths of sheep that had occurred in the district. Fencing was certainly expensive, but he believed it would pay to erect fencing, if only to keep the young ewes from the rams. The flockmaster should not be in a hurry to sell young wethers, for their clip each year, up till the time they became six-toothed, was very often of more value than the lamb and wool from a younger ewe. A five-guinea stud ram from a reputable breeder, mated to 50 selected ewes, should, in time, build up a herd of high standard. In selecting the animals for breeding, particular attention, he thought, should be paid to the sheep, to see that they had clean faces and clean legs, at least as high up as the knee. Woolly faces and legs were a source of annoyance during the grass-seed season. Last, but not least, sheepbreeders in the Miltalie district should be careful when reading advice tendered to breeders to see that conditions in each case were equal, for it was of no use attempting to carry out suggestions intended for a district with a 20in. rainfall. In the discussion that followed, Mr. W. Deer did not think it necessary to wait until the ewe was six-toothed before using her for breeding. Mr. T. McEachen favored a plain-bodied



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sheep for their district on account of the blowfly pest. Mr. D. C. Bagnell agreed with the previous speaker, and would use the breed ewe for breeding before she became six-toothed. Mr. W. G. Smith would breed from the ewe when she was four-toothed. He favored a plain-bodied ewe mated to a ram with a fair amount of wrinkle. Messrs. J. S. Jacobs and J. P. and H. R. Storey also spoke.

MOUNT HOPE.

July 8th.—Present: nine members.

An Influence for Better Farming.—Mr. J. H. Vigar read an extract on this subject, which dealt with the cinematograph as an aid to farming, wherein it was shown that such occupations as dairying, stock breeding, working of machinery, &c., could be shown on the screen for the benefit of farmers. It also stated that in the hands of capable departmental officers it would make lectures much more attractive to the man on the land. In the discussion which followed, Mr. R. L. Myers was of the opinion that motion pictures would do a great deal of good if used in the right way. Mr. Speed thought it would not do among the ordinary farmers, as demonstrations on their own particular class of soils would be more helpful. Mr. G. A. Vigar said every man had to learn his own farm from practical experience, therefore he thought the cinematograph would not take on, as it would probably show farms with a different class of soil from that to which the audience had been accustomed.

ROBERTS AND VERRAN.

June 8th.—Present: six members.

Buildings on the Farm.—Mr. A. J. Cowley contributed a paper on this subject. Most farms, he said, were established and developed with a strictly limited amount of capital. Whenever a building of any kind was contemplated the question always arose, "Which is needed most—the building or some other requirement?" Possibly more fencing might be required, more clearing done, more up-to-date implements, a larger team needed, or the introduction of sheep, cattle, or some other line. He would commence by erecting a substantial building designed to serve the purpose of a barn in a position conveniently situated and in the proper relative position to the house. That building could be made to serve the purpose of a dwelling combined with storage for seed wheat, horse feed, or anything else which should be sheltered from the weather. Either attached to that building or placed at a convenient distance from it should be a shed large enough to cover the vehicles and implements. To prevent trouble from mice and other vermin a concrete floor, well cemented on the surface, would more than repay its cost within a year or two. Should temporary partition walls be required, they should be put in after the floor, so that no break would occur in its surface. The floors should be particularly good where they joined the outside walls, to prevent mice from digging their way in from the outside. Should it be necessary to provide accommodation for a family, the barn could be partitioned into several compartments, and the shed, which in that case was better in a detached position, made large enough to include under its shelter the seed wheat, grain, feed, work bench, and other items which would otherwise occupy a place in the barn. To catch the water from the roofs of those buildings there would be a well-built cement tank, either under or above the ground, or, failing that, a large iron tank at each building. Those buildings should be sufficient to enable a start to be made, providing the scrub was of sufficient height and density to form a reasonable shelter for livestock, which at that stage usually consisted of horses only. Temporary yards should be erected in a well-sheltered spot if the site selected for the permanent stable was not so protected. The order in which the dwelling-house, stable, larger implement shed, blacksmith and general workshop, cow shed, pigsty, poultryhouses, shearing shed, silos, tanks, stock yards, &c., should follow would depend largely upon the development of the farm and the prosperity of the farmer. An approximate plan of the layout of the farm buildings likely to be required should be made as soon as the farmer had become accustomed to the layout of the land. Every building could then be erected in its proper position, and unsightliness and inconvenience avoided. Notice should be taken of where the water ran, and in what direction. All buildings should be kept out of hollows, and should be so situated that, if possible, the overflow water could be run to a central dam or underground tank. At the same time it was desirable to have the yards attached to the stable in such a position that the drainage of the yard did not run down the path where the stock travelled to water. The size of the buildings would vary on different farms, according to the capacity of the farm. He preferred the use of iron for roofing, with a possible exception on the ground of lower first cost and the greater comfort of straw to the animals in the case of buildings for the accommodation of livestock. Straw roofs were not permanent, and required a great deal of attention and labor in renewing them from time to time, and if allowed to leak they would be more harmful to the animals than direct exposure to the rain. A straw roof also harbored vermin, and made it almost impossible to clear out either mice or sparrows. For the walls of all permanent buildings he preferred either stone or concrete, whichever could be erected most economically. If good building stone was not at hand, and gravel and limestone was, a concrete wall would be the cheapest, and he thought it could be made equal to stone for either comfort or durability, and almost so in appearance. If stone or gravel were not near at hand, and labor was not easily obtainable, wood and iron could be more quickly and generally more cheaply erected, and would answer the purpose for such buildings as chaff sheds, barn, smithy, &c., but were not suitable for accommodating livestock, on account of their being less resistant to extremes of temperatures. An iron house, he said, could not be compared with one erected of stone or concrete insofar as comfort was concerned, and a measure of comfort was essential to good health. If an iron building had to be resorted to for a start, it should be designed for use as a barn, and temporarily partitioned into rooms, until a more substantial building could be erected. A good discussion followed the reading of the paper, the members agreeing with the views of the writer. Mr. H. Simmons then contributed a paper entitled "Fallowing."

SMOKY BAY.

June 10th.—Present: 10 members.

Mr. Blumson contributed a paper entitled "Water, Feed, and Labor Conservation," which was well discussed, and the opinions expressed therein were indorsed by the members present.

TALIA.

June 24th.—Present: 10 members and visitors.

Fallowing.—Mr. F. J. Wheaton, in a paper under this title, said fallowing was one of the most important operations on the farm, and should be commenced immediately after seeding with the share plough, working at a depth of 4in. to 4½in. During the wet season he advocated the use of the harrows to destroy the weeds before they became too strongly rooted. Whilst fallowing was so important an operation, he contended that the farmer who ploughed up more land than he could properly cope with was making a serious mistake. Most of the horses in that district were not permanently stabled, and for that reason the speaker favored the plan of harnessing an extra horse or two to the plough, to make the work easier for the team. When a paddock was being fallowed, he thought it would be an advantage to put the sheep on the land, in order that a further check might be given to the weeds. If the soil was of a very light nature, and subject to drift, it should be left in a rough condition, and only cultivated immediately after a good fall of rain. As the season advanced, the plough should not be worked too deeply, because if the land was worked too deeply late in the year there was not always sufficient rain to consolidate a good seed bed. However, the farmer would have to use his own judgment for the depth of ploughing, as that question depended very largely on the nature of the season.

YADNARIE (Average annual rainfall, 14.09in.).

June 6th.—Present: 17 members and three visitors.

Fallowing Mallee Land.—Mr. P. G. Dolling, who contributed a paper dealing with this subject, said fallowing was one of the most important factors in the production of good crops, and the farmer should fallow as much of the available land as possible. He was not in favor of fallowing new land, because the young growth of mallee shoots would rob the soil of the necessary plant food, nor did he believe in fallowing land that had carried a crop the previous year. Such a practice only gave the land one year's spell. Land that had carried two or three successive crops of wheat and one of oats was the most profitable. He would not burn the stubble of the last crop, but leave it out for pasture, and with the self-sown grain and grass a good burn would be assured the following summer; that would destroy many loose stumps. He considered that 2½in. was quite deep enough for ploughing mallee lands, for most of the scrub land was of a loose nature, and could be successfully fallowed with a cultivating plough. Deep ploughing was a great mistake where the land was subject to take-all. The chief factor in cultivating was to keep the land free from weeds, and if fallowing was done between the end of June and the end of August the weeds would not have made much growth, and they could then be easily dealt with by subsequent cultivations. The land should be left for a few weeks before harrowing, and again worked back at the end of September, or as soon after a rain as possible. A spring-tooth cultivator would do for that operation; finally the land should be again harrowed. The subsequent workings not only destroyed a great number of weeds, but they also assisted in conservation of moisture. In addition to that, chemical and bacterial activity, that was so necessary to the growth of cereal crops, was promoted. It was a good practice to keep the surface of the soil loose in the summer months, and, in the event of heavy summer rains following, the land should be worked lightly, so soon after harvest as the teams were available. In the discussion that followed several speakers did not favor fallowing new land, but would rather sow a crop on it with a view of getting a stubble burn to check the growth of mallee shoots. Other members thought new land might be fallowed to advantage, particularly land that carried small dense mallee and broom bush. On such land deep ploughing for the first year was advocated, as no harm would result if a little clay was turned up with the plough. Land cleared after a fire had gone through the standing scrub might also be fallowed to advantage. Members did not think a skim plough would do justice to fallowing the bulk of the country in that locality, as the land set very hard if left to lie out for several years. In such cases a good fallowing plough was required to break it up. Several members said land that had a tendency to drift should be left as rough as possible. Such land should be worked with a springtyne cultivator, as that implement did not work the land down so smoothly as the twin plough. If the twin plough was used, it should be fitted with cultivator shares, and have the mouldboard removed. Finally, it was contended that the stubble of the last crop should be burnt on land where shoots were still plentiful, and oats drilled in for feed. If the land was fairly free from shoots the stubble could be left and burnt the following summer.

YALLUNDA (Average annual rainfall, 18in. to 19in.).

July 8th.—Present: six members.

WHEATGROWING.—Mr. G. Smith, who read a short paper on this subject, dealt with the growing of wheat on poor land. He stated that he first ploughed the land to a depth of 4in., and sowed pease at the rate of 1bush. with 60lbs. of bonedust to the acre. In the spring of the year the sheep fed off the crop. Later on in the season the paddock was ploughed and given a dressing of 1cwt. of lime to the acre, and in April the land was cultivated and sown with 1bush. of Federation wheat and 40lbs. of super to the acre. The yield received at harvest time was 14bush. to the acre. Another portion of the paddock was fallowed and sown with 1bush. of the same variety of wheat and 80lbs. of super to the acre, from which an average return of 9bush. to the acre was received. The next year the paddock was left out for feed, and the difference in the feed growing on the two portions of the paddock was most marked. The plot that had grown the pease grew considerably more and better feed than the other that had only carried the crop of wheat. A good discussion followed, and it was generally agreed that pease was an excellent crop for enriching the soil.

BIG SWAMP, July 6th.—The meeting discussed the question, "Boy Immigration." Messrs. F. Chapman and F. Gore, who each have one of the immigrated boys on their farms, gave members information regarding the objects of the scheme. Several other matters were brought forward for discussion, and the officers were elected for the forthcoming term.

BUTLER, June 12th.—An interesting discussion took place on the subject, "Bulk Handling of Grain." Messrs. W. Treasure, J. A. Hughes, D. Butler, A. Pfitzner, and C. F. Jericho all spoke in favor of the introduction of the system. Short papers on the subject, "Best Breed of Sheep for the Farm," were contributed by Messrs. A. Pfitzner and A. J. Parsons.

PETINA, June 24th.—The meeting was devoted to a discussion on the subjects, "How to Make Farm Life More Attractive" and "Forage Poisoning." Other subjects of timely interest were also brought forward, and an interesting evening was spent.

YADNARIE, July 4th.—On the occasion of the annual meeting of the above Branch the Instructor for Mallee Lands (Mr. C. P. Hodge) attended the gathering, and delivered an address, "Farming in Mallee Land." Members from the Cleve and Roberts and Verran Branches were also present, and at the conclusion of the business of the Branch the meeting took the form of a social, which included musical items and dancing. Supper was provided by the ladies.

YEELANNA, July 8th.—The meeting took the form of a "Question Box," when several subjects of timely interest were brought before the Branch for discussion. The delegates were also appointed to attend the Annual Congress.

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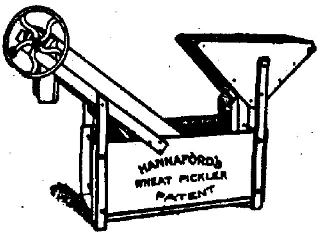

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COONALPYN (Average annual rainfall, 17.49in.).

June 8th.

Charcoal Burning.—Mr. L. Field read the following paper:—"First select a site for the kiln in clayey ground, and then dig a pit about 16ft. long, 5ft. deep, and 4ft. wide. Then place iron rails on the top edges of the pit to prevent the sides being broken. Dig six flueholes—one at each end and two on each side—about 18in. from the sides of the pit, and slope the holes so that they come out at the bottom of the pit. The pit can be filled with wood and stacked up to about 5ft. from the surface of the ground. Light the wood by way of the flueholes, and when the wood has burned below the level of the ground place an iron rail lengthways across the top of the pit. Cover the pit with sheets of iron not less than ¼in. thick. Then place shall sheets of iron over the flueholes, and exclude all air from the pit by closing up all fissues with earth. Work the pit for about five hours or six hours. This can be done by leaving two flueholes open—one to let the air in, so as to drive the smoke out of the other hole. Work the kiln until nothing but a blue film can be seen coming out of the hole. Then close the pit so that no air can gain admittance. Special care should be taken to see that no air gets in, as it affects the output of the kiln. The pit can be opened up three or four days after it is filled, and the charcoal taken out."

Advantages of Early Fallow.—In the course of a short paper dealing with this subject, Mr. F. Pitman said working sour land early in the season gave the soil a chance to sweeten before the seed was sown. It enabled one to expose heavy and clayey soils to the action of the sun and air. By starting the plough early in the season, the farmer was enabled to do the fallowing whilst the soil was in a moist condition. Again, in the case of a farmer with a large area to bring under the plough, it was imperative that he should make an early start, or the weeds would make too much growth to be properly buried. An early start meant an early finish, and that enabled the farmer to give the land a thorough working with the harrows before harvest, thereby preventing and minimising the growth of summer weeds. Another point, and an important one, was that the fallow land was able to retain the maximum amount of moisture, which was so essential to the ultimate success of the crop.

WINKIE.

July 4th.—Present: 25 members, two visitors.

The annual meeting of the Branch took place at the residence of Mr. H. D. Herriott, when a tour of inspection was made of the property, including the buildings, crops, vines, and trees. Mr. C. G. Savage (Manager of the Government Experimental Orchard) gave advice on the treatment of young Gordo vines. Mr. H. von Bertouch pruned two deciduous trees, and explained his methods of pruning. Afternoon tea was then partaken of, and the annual report of the Branch read, followed by the election of officers for the ensuing year. Mr. F. C. Richards, of the Department of Agriculture, was present and delivered an address, "The Work of the Agricultural Bureau."

GERANIUM, July 8th.—Mr. Lillecrappe read an article from the *Journal of Agriculture*, "Blowflies and Sheep," and an interesting discussion followed. The remainder of the evening was spent in arranging a programme of meetings for the next five meetings of the Branch.

GLOSSOP, June 7th.—Mr. H. Levein, of the Berri Branch, attended the meeting and gave an informal address, "Work on the Block." Mr. L. A. Chapple, of the Berri Branch, was also present, and took an active part in the discussion that followed the address.

LONE GUM, June 14th.—Mr. H. G. Mortimer delivered an address, "The Feeding and Breathing Organs of the Horse." The annual report was presented by the Hon. Secretary (Mr. L. A. Maddern), and the officers were elected for the coming year.

LONE GUM, July 12th.—An address, "Lateral Pruning as applied to the Sultana Vine," was delivered by Mr. H. Berriman to a gathering of 77 members and three visitors. A further meeting was held on July 14th at Mr. K. G. Feige's block, when the Manager of the Berri Experimental Orchard (Mr. C. G. Savage) gave a pruning demonstration on young vines and trees before an audience of 50 members.

MURRAY BRIDGE, April 11th.—The Director of the Botanic Garden (Mr. F. J. Bailey) gave an interesting lantern lecture. On the following day the Director visited many local gardens, and gave the residents advice on floral matters

PARILLA, May 9th.—An article, "Cultivation Practices," was read by the Hon. Secretary (Mr. C. S. Foale). A very interesting and instructive discussion followed, in which all members participated. The four-course rotation—wheat, oats, grass, bare fallow—was unanimously considered to be the best method to adopt to escape take-all in wheat.

WAIKERIE, July 8th.—Mr. E. Miller read a paper "Cultivation," and an interesting discussion followed. The officers were then elected for the forthcoming year. At a further meeting, held on July 20th, Mr. W. E. Muspratt (Irrigation Instructor, Renmark) attended the meeting and delivered an address, "Manures," to a gathering of 46 members and visitors.

SOUTH AND HILLS DISTRICT.

ASHBOURNE.

May 22nd.—Present: 12 members.

LAMBING.—Mr. W. H. Cuming read a paper on this subject, in which he stated that July and August were the best months for lambing, so far as regards the wool clip. In the early days, when sheep farming was started in South Australia, it

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was the practice to commence lambing about the beginning of May. By chance some owners got some lambs in March, and, being a good season, they turned out so well that a number of flockmasters preferred the lambs coming late in March or early in April. The April Lamb.—If no rain was received during March or April there would be very little chance of getting a good lambing. The ewe became very low in condition, and all hope of securing a good clip of wool disappeared. Lambs that were dropped would be in poor condition and stunted, and would not make strong sheep. The ewe would probably cut about 8lbs. wool at 10½d. and 3lbs. at 6d., making a total of 8s. 6d. The lamb at six months old would realise 10s. and 3lbs. of lamb's wool at 6d. lb.=1s. 6d. The total income from the ewe per annum would be 20s. With the May lamb the ewe would have been growing wool during April, and consequently would show a larger profit, go through the shearing shed in better condition, and have a stronger lamb. The income from such a sheep would be 9lbs. fleece at 11d. lb., 8s. 3d.; 3½lbs. pieces at 6½d. lb., 1s. 10¾d.; 2½lbs. lamb's wool at 5½d. lb., 1s. 1¾d.; lamb at six months old, 10s., making the income from the ewe for 12 months £1 1s. 3½d. If the lambs were dropped in June the ewe had been two months longer without a lamb, and, being near springtime, she would give a larger return, and carry a more valuable fleece than the April or May ewe. The income from the June lambing would be as follows:—10lbs. fleece at 11½d. lb., 9s. 7d.; 4lbs. pieces at 7d. lb., 2s. 4d.; 2 lbs. lamb's wool at 5d. lb., 10d.; lamb at six months of age, 10s.; total income, £1 2s. 9d. With the July and August lambing the ewe would go through the shed practically as a dry sheep. The wool would be in good condition, and ready to shear during September. The lamb would be strong and sturdy, and would be as large as the earlier lambs in the following April. The 11lbs. of fleece would realise 1s. per lb., 11s.; 4½lbs. pieces at 8d., 3s.; 1½lbs. lamb's wool at 4d. lb., 6d.; lamb at six months of age, 10s.; total, £1 4s. 6d. The speaker suggested keeping two ewes that cut the same weight of wool, and lambing one during April and keeping the other dry. The dry ewe would cut 3lbs. to 4lbs. more wool than the other. If the same ewe be lambed during July or August it would cut within 1lb. of the dry ewe. He stated that for many years his ewes lambed during April and May, but for the last five years the lambs had been dropped during July and August, and he noticed that the clip had been increasing every year. During last year the average was 2½lbs. more than it was six years ago for ewes, lambs, hoggets, and wethers. One-third of the flock was lambs, which cut 1½lbs. of wool, so that it would be seen that the increase had come from the grown sheep. The fox very seldom killed late lambs, but did a great deal of damage to the young lambs. The one objection to late lambing was that the heavy fleece might get the ewes down when lambing, and possibly they would be unable to rise without help. A good discussion followed the reading of the paper.

BALHANNAH.

July 7th.—Present: 35 members.

Mr. H. Wicks (member of the Advisory Board) and the Secretary (Mr. H. J. Finnis) attended the annual meeting and addressed the members. Representatives were also present from the Longwood and Mount Barker Branches. Musical items and dancing brought a very successful gathering to a close.

Bud Selection.—The following paper was contributed by the Chairman (Mr. H. Wicks) at the March meeting:—The growing necessity in Australia to produce fruit of better quality so that growers are enabled to compete on the world's markets with fresh, dried, and canned fruits, has naturally resulted in a demand for better trees, and I am quite safe in saying that the most important factor in the production of better trees, is bud selection. Up to the present time far too little importance has been attached to this branch of propagation in Australia. It is quite as reasonable to expect plums on thistles as it is to hope to obtain paying crops of first quality fruit from trees which have been propagated from parent trees which are not true to type or consistent and regular bearers. The pedigree parent tree in standard commercial varieties is just as necessary and is just as capable of affecting the whole industry as pure bred cattle are to the dairy business. The United States of America have already realised the vast importance of bud selection, not only to the fruit grower alone, but incidentally to the welfare of the country, and this point is emphasised when it is noted that in California alone, this one item has already made a difference of millions of dollars annually in the production of more and better fruit. It is strange to note that here in Australia, this matter seems to be left in the hands of the nurserymen, the person whom it really affects directly, the least of all. Is it not time that the fruitgrowing communities took this matter up and demanded that something be done? Of course, we as nurserymen, all realise that it is the best business policy to produce and sell to our clients the best possible in the way of plants or trees, but there is no gainsaying the fact that once the trees or plants are sold, providing they are true to name, we are not likely to hear more of them, but the purchaser has to stand the loss should they be propagated from inferior stock, and prove to be only half productive or of an inferior type. Why then should this matter, which is evidently of such vital importance to the fruitgrower, be left in the nurserymen's hands alone to be started? I mention the foregoing merely to emphasise the fact that it is time the fruitgrowers moved and sought the co-operation of the Government and the nurserymen in this matter, as it will undoubtedly take the combined action of all three parties, together with the expense of a considerable amount of time and money before actual results will eventuate. We, as nurserymen, have the interests of the fruitgrowers at heart, and I am sure would welcome action in this direction. As the increased production of fruit means increased exportation, how are we to compete in the world's markets with our happy-go-lucky methods of production, against countries that are already boasting of millions of dollars saved annually by their vigilance and combined action in this matter of bud selection. We are all acquainted with what are generally termed "sports," but are in reality bud variations, and I think most of us will have no difficulty in calling to mind cases where "sports" have appeared on certain trees with every promise of being valuable additions to the lists of commercial varieties, and which have been seized upon, propagated with all haste, and boosted as a wonderful line. With what results? Occasionally a "sport" will remain true to its original appearance and general characteristics, but in the majority of cases will show a marked tendency to revert to its parent type. It is here that the combined action of the growers, nurserymen, and the Government would be of great value, for in such cases a series of elimination tests, too costly for any individual to undertake, and taking a considerable amount of time, would possibly succeed in producing a positively fixed and new variety of great commercial value. The records alone which would be kept from the commencement of the scheme would be invaluable. A case in point—I am at present managing an orchard which was planted with a view to shipping the fruit overseas, and in two blocks of approximately of five acres each, the great mistake was made in planting too many Jonathans together without any fertilising variety near enough to be of value for pollenizing purposes, with the result that, although the trees are well over the bearing age, they have never had a crop worthy of the name. Having convinced myself by tests that pollenation is necessary, now comes the work of grafting or budding over a great number of these trees to some variety suitable for the purpose of pollenation. What a boon to me and what an increase in the actual value of the orchard, to say nothing of the extra value gained from heavier crops and better fruit, if I could go, say, to a Government controlled orchard and obtain scions of the necessary varieties from proved parent trees with a pedigree, or shall I say performance sheet sufficient to satisfy even the most critical. Contrast this with what I have actually to do, knowing the value of bud selection, I must now hunt through my neighbors' orchards during this fruit season with a view to seeing the best croppers and best types of the varieties I need, query the owners with regard to past performances, and finally beg or steal scions from the trees which I consider worthy of becoming the parents of the future trees of the orchard. There is another point which is worth mentioning with reference to this matter. Some little time ago while strolling through the orchard with a visitor from Victoria, we were discussing the possibilities of bud selection, when he suggested a search for difference in types of Jonathans, and in less than an hour we had discovered no less than five very distinct types in this variety—all Jonathan it is true, but far from being all pure breds such as would have been possible had the trees been worked from pedigreed parent trees. It has been stated that bud selection is not so important as it is believed to be by some, for the reason that bud reversion is just as likely to take place in buds from the pedigreed trees as from any other, but this is to my mind very far from being the truth. If elimination tests are carried out and only the trees which have proved to be consistent used for parents, the bud variation through propagation would become negligible, and it is here that the aid of the nurseryman would become invaluable, because of the fact that any variation in the growth or habits of any individual tree would be most noticeable in the nursery beds, owing to the facilities for comparison which are offered when the trees are in such close proximity to one another. The nursery bed would, therefore, take the place of the final test, as regards any unusual bud development. I have for a number of years been propagating all my Prune d'Agen from four or five standards which stand alone as regards quality, quantity, and regularity of crops, in a block of about a hundred trees. Up to the present I have found in the nursery beds only one tree which shows any different characteristics from its parents, and this tree has been planted out for further observation. We notice that this matter of bud selection is commanding keen interest and is urging our New Zealand neighbors to immediate action, and it is to their credit that they should be the first—so far as I am aware—in the Southern Hemisphere to realise the importance of the subject, and meet it in a practical manner. Certainly we should commence operations without delay, and make an effort to establish parent trees in the most select varieties of drying, canning, and export fruits, but, as previously mentioned, I consider it absurd to expect the nurserymen to take all the responsibility of moving in the matter, as the work is too extensive to undertake without the co-operation of all those interested in the production of better and larger quantities of fruit. In conclusion, I would like to refer to a statement made earlier in this paper, which states that California is saving millions of dollars annually through the direct benefits of bud selection, and to point out that every year lost to us is also millions of dollars lost also, and in this instance the money is like the time in so much as it will never be regained.

BLACKHEATH.

June 9th.—Present: 10 members.

Mixed Farming.—Mr. H. Paech, who contributed a paper under the title, ''Care and Management of a Mixed Farm,' said the homestead should be erected on rising ground, somewhere near a good surface spring or well of water. All other farm buildings should be away from the house. Wheat, oats, sheep, fowls, bees, and fruit were six of the principal side lines that could be profitably conducted in their district, but as the harvesting of wheat and oats came at the same time as the main honey flow, it was not possible to manage successfully the bees and the cereal crops. A farmer should have all the necessary and best machinery required to carry on farm work, and a good machinery shed in which to house the implements when not in use. A warm stable should be erected for the horses, and a separate stall provided for each animal. The land should be thoroughly cultivated, and then drilled with a bushel or a bushel and a quarter of wheat, according to the variety, and about 80lbs. to 100lbs. of super to the acre. Oats required about 2bush. of seed to the acre, and the same quantity of super as wheat. Cross harrowing should be carried on after the drilling, if possible. When the wheat and oats started to cover the ground, and the ground was in a moist condition, the area that was to be cut for hay should be rolled. When the wheat was well out in head, and carrying a nice full grain, it was ready for binding. Oats should be within a fortnight of being ripe before they were cut for hay. Every farmer should endeavor to keep a 12-months' supply of fodder on hand. After the crop had been cut and stooked for at least three weeks, it could be carted into the hay shed or stack. When the stack was finished it should be covered as soon as possible with a good coat of straw. After harvesting, all the cocky chaff should be carted into a shed or put into a heap and covered with straw, for feeding to the stock that was not working during the winter. Fallowing should be commenced immediately after seeding was finished, and the land then worked with the harrows. Should there be any heavy rains during the summer the fallow should be cultivated to kill all summer weeds and to conserve moisture for the next season. The most important sideline in their district was woolgrowing, and the Merino was, without doubt, the most popular breed with the farmers. All ewes should be crutched two or three times during a season to minimise losses from flies. Every stockowner's aim should be to improve his herds and stock, and nothing but good sires should be used. The ewes should be mated to lamb during March and April. A fair-sized yard should be made with wire netting sides to keep out foxes, and the ewes shut up at night and hand fed. By so doing, many a ewe and lamb would be saved, which would well repay for all the trouble and feed. If six acres or seven acres of peas were sown, and, when ripe, carted into a stack, enough fodder would be provided to feed 100 ewes during lambing. Nothing, in the speaker's experience, was better than peas for producing milk for the lambs. Fowls should be kept on the farm, preferably white Leghorns, as they were undoubtedly the best layers. In most seasons the farmer had a fair quantity of wheat which was not fit for milling, but it could be profitably fed to the fowls. Two or three good cows, well fed when feed was scarce, would keep the home supplied with milk and butter, and help to pay for groceries. A fruit and vegetable garden should be laid out for home use. During the slack time of the year all bushes and fallen timber which were of no use should be burnt; if left in the paddocks it provides a harbor for rabbits. All machinery that needed repairs should be attended to, and all harness overhauled and well greased. Repairs to any broken fences should also be carried out.

CHERRY GARDENS (Average annual rainfall, 35.03in.).

July 4th.—Present: 11 members and visitors.

Pruning Deciduous Fruit Trees.—Mr. J. L. Stone, who read a paper on this subject, said such trees as the peach, nectarine, apricot, and Japanese plum when received from the nursery should be cut back to the desired height, leaving only

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three or four of the best and strongest arms to form the shape of the tree. As the tree grew older the number of arms could be increased according to the growth it made. The secateurs should have a keen edge, and be used in such a manner that they would not leave a bruised and irregular wound on the tree. English varieties of plums, and especially prunes, did not thrive under heavy pruning, and after the shape of the tree had been established a light thinning and topping was all that was necessary. Those varieties that required heavy pruning to cause a continuous growth of laterals should be pruned back to a little beyond the point where the base buds formed on the arm of the tree. Such limbs would be called spurs or fruiting wood, of which it was advisable to keep a good supply on the main arms or limbs of the tree. It was considered that the tree that was thin and open would produce fruits of a better marketable quality and quantity than one that carried a dense foliage. No dead branches or spurs should be left on any tree. Young apple and pear trees should be started off without any limbs. When starting the limbs those buds that were to form the arms of the tree should be in such a position that they would not be opposite one another, for such a condition would cause trouble later on, either by the weight of fruit or the wind splitting the tree. It was not desirable to encourage fruit buds whilst the formation of the tree was still in progress, otherwise sturdy arms would have to be sacrificed for fruit, which would result in an ill-formed tree. If too many arms developed on the tree, and the stock was not able to support them, they should be removed with a saw, particular care being taken to see that the cuts were made in such a way that the weather or water would not have any injurious effect on the tree. All saw cuts should be pared around the edges with a sharp knife to ensure a clean healing of the wound. Any large cuts directly exposed to the effect of the sun and rain should be given a coat of stiff paint. In building up the young tree it was advisable to remove any cross limbs and to keep the centre as open as possible. Water shoots and laterals should also be cut back, so that the tree would take the form of a vase, to facilitate spraying and picking, and to admit plenty of sunlight and air to the centre of the tree. Another good point to observe was that the laterals should not be too lengthy. Short and stout spurs enabled the orchardist to do the spraying with comparative ease, and, further, the fruit was not so likely to be blown off by the wind. When the tree had reached maturity, and if it proved to be a very heavy bearer, it would possibly be advisable to remove some of the long fruit spurs if the fruit showed any signs of want of nourishment. An interesting discussion followed, and Mr. Stone replied to a number of questions.

IRON BANK (Average annual rainfall, 33in. to 34in.).

June 10th.—Present: seven members.

The Secretary (Mr. H. E. Tucker) contributed a paper entitled "Improvement of Poor Pastures." After exhaustive experiments he said that it had been found that the best method of improving poor pastures was to sow clovers and manure the land with artificial manures, preferably basic slag. The best clovers to sow in that district were White Dutch and Subterranean. Both those varieties were hardy and would grow on almost any soil, and being heavy seeders they would spread quickly and choke out the poorer grasses. He considered that the best time to sow the seed was when the first rains were expected. Paspalum was also a plant worth introducing into that district.

At a subsequent meeting held on July 8th, the election of officers took place after which there was a discussion on the possibilities of "Hubam Clover."

MILANG.

June 10th.—Present: 22 members.

Laying Out a New Farm.—Mr. Wm. Perry, who contributed a paper dealing with this subject, said the first thought of the new settler should be the selection of the site for the homestead. An ideal spot for the home would be on a gentle rise near the centre of the block. The nature of the soil should also be studied, with a view to laying out a flower and vegetable garden. Timber should be left standing around the homestead, and also in each of the paddocks, to act as breakwinds for the house and to provide shelter for the stock. In that district, he suggested that the front of the house should face the west, so that the back of the house would receive the benefit of the morning sun. The stables and implement sheds should be built in an easterly and westerly direction, at least 100 yards from the house. If that was done, the stable yards would keep fairly dry, and the sun would not be able to shine on the implements. If the farmer intended making the barn serve the purpose of a shearing shed, the speaker suggested that it should be erected in an easterly and westerly direction. The sheep could then be yarded from the eastern end of the shed, and if port holes were made alongside the northern wall the sheep could be run straight out into the yards. If possible, small paddocks should be laid out close to the stable. These paddocks could be sown with barley, and used for depasturing the cows, sheep, and a spare horse or two. The size of the ordinary paddocks of the farm would largely depend on the nature of the soil; but where the farmer had land of a fair average quality to deal with, the speaker suggested subdividing the holding into paddocks containing 100 acres. Reverting to the homestead, he said it was too frequently noticed in country homes that too much attention was paid to the front rooms of the house. The women folk of the farm had to spend a good deal of their time in the kitchen, and some consideration should be given to their wants. The kitchen should be a room measuring at least 20ft. x 13ft., with an open fireplace and stove built in between the fireplace and the wall. If it could be managed, arrangements should be made to have water laid on to the kitchen.

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RAPID BAY.

July 1st.—Present: 19 members.

Feeding of Dairy Cows.—Mr. John Ford contributed a paper on this subject, in which he said the success of a dairy herd depended entirely upon the food it received. Cows should be fed regularly and well, morning and evening on bran and chaff, and, if possible, crushed oats should be included in the ration. He would feed about two kerosine tins full of chaff and two-thirds of a gallon of bran and crushed oats mixed. Discretion should be exercised, however, because if it was good oaten chaff, half a gallon of bran would be ample for each cow. The best way to mix the bran and oats was to have a bin specially for that purpose, and mix a bag of bran and one of oats well together, and to always have the same measure for each feeding. Where possible, he would have a separate manger for each animal, because some cows ate much faster than others, with the result that they would consume nearly twice as much food as the slow eaters. Some persons preferred the use of nose bags as a quick and easy method. He thought that was an excellent idea if the animals would feed from them, because there was no waste. A shed should be provided, or failing that, each animal should be rugged. If that was done the animals would require less food and would keep in good condition and yield much richer milk. If the land was suitable, he advised growing a crop of barley for early greenfeed. For very early feed, a small patch of mustard could be grown, but only a limited supply, because it had to be cut whilst very young and tender, otherwise it had a detrimental effect on the milk and cream. Maize, lucerne, and mangolds were excellent for summer feed where it was possible to grow them. Many people were of the opinion that the larger the number of cows kept the greater would be their profits, but everything depended upon the care and feeding of the animals. It was a mistake to handle milking cows in a rough manner, because they would become so nervous as to dry themselves off to a great extent. Young heifers should be fed on bran and chaff a few weeks before calving, they could then be usually caught without difficulty. If a cow showed signs of stiffness, or was "drawn up," he advised feeding a bran mash consisting of one gallon of bran and about the same quantity of water fed regularly every day for a week or so. All signs of the trouble would then disappear. During the discussion which followed, members stated that molasses was of little use in producing milk and butter. It was agreed that the cows should be tested regularly to ascertain the butter-fat yields of each animal.

ROCKWOOD.

July 7th.—Present: 17 members and three visitors.

How to Make Farm Life Attractive.—Mr. A. E. Henley, who contributed a paper on this subject, first dealt with the question from the point of view of the hired man on the farm. The speaker said the farmer should always endeavor to be on the best terms with his man, and to foster interest in the work of the property the man should be taught how to use the different implements and all other work in connection with the general working of the farm. During the slack seasons of the year he should be permitted to take part in football and cricket. That would make a break from the ordinary routine work of the farm, and act as an incentive to the man to give his best work to his master. Again, the farm employee should not be expected to put in most of his spare time in his own private room. If the laborer was permitted to have his meals with the family, and had access to the living rooms of the homestead, he would feel more at home, and also feel that the farmer was taking a kindly interest in his welfare. Another point that often made farm life appear uninteresting was that of the farmer endeavoring to work his property shorthanded, thereby making a lot of work for the man to do when he came in from the fields at nights. The children should be encouraged to plant a garden, and by allowing them to keep the money derived from the sale of the vegetables, interest in the work of the farm would be stimulated. The children, as they grew older, would naturally have to assist in looking after the cows, pigs, and poultry, but by giving them a percentage of the returns from such side lines their efforts in looking after the stock would be considerably stimulated. Every rural worker should be a member of the Agricultural Bureau, for from that institution much beneficial knowledge could be obtained that would assist the man in the working of his property. Mr. Steed, who opened the discussion, agreed that it was a very difficult matter to get people to leave the city, where amusements, &c., had such a hold of the young folk. Mr. Collett thought some scheme should be evolved whereby those people would be induced to go on the land and assist the rural industries. Mr. Collett stated that he had recently attended a meeting of the Bureau, and could not but help notice what a few young men were in the audience. That was to be deplored, for it showed a great lack of interest on the part of the young country people as regards matters of agriculture. Mr. E. R. Heath thought that if a share of the profits of the holding was given to those employed on the property, more interest would be taken in the work of the farm, and the hired man would be more contented. Mr. C. D. Scott thought too much time was devoted to sport, and the more that was encouraged the greater the evil would be, because the more young men had the more unsettled they would become. He also favored giving a share of profits to those employed on the farm. Mr. Ness believed in allowing time off for recreation, for it made the farm life more attractive. He advocated a set wage in preference to giving a bonus.

CLARENDON, June 7th.—During the afternoon the Horticultural Instructor (Mr. G. Quinn) gave a pruning demonstration in the orchard and vineyard of Messrs. Morphett & Son to a large number of interested orchardists. In the evening Mr. Quinn delivered an address, "The Principles of Pruning," and replied to numerous questions.

CYGNET RIVER, June 22nd.—Mr. J. J. Osterstock tabled some fine samples of apples. Included in the exhibit were specimens of the following varieties:—Cleopatra, Rome Beauty, Glengyle, Five Crown, and Winter Strawberry Pippin. Mr. Osterstock gave a short address, and dealt with the suitability of the different varieties to Kangaroo Island. Other matters of local interest were also discussed.

MEADOWS, July 5th.—Mr. Smith read an article "Breeds of Cattle," and an interesting discussion followed in which it was considered that the Jersey was the most profitable breed for the dairy farm.

MORPHETT VALE, July 11th.—On the occasion of the annual meeting the Hon. Secretary (Mr. A. F. Furniss) presented the report of the work performed by the Branch during the past year, and the election of officers took place. The Chairman urged members to take a keener interest in the work of the Branch, and hoped that future gatherings would show more progress. Other questions, including the growing of pine trees and pruning of vines, were also brought forward for discussion.

PORT ELLIOT, June 17th.—The subject, "Boy Immigration," was brought before the meeting. The Hon. Secretary (Mr. H. B. Welch) stated that a number of boys from England had been found positions in the surrounding districts, and mentioned that the district council of Encounter Bay proposed forming a "Welfare Committee" to see that the boys received proper care and attention at the hands of the farmers. Matters relating to the dairying industry were also discussed.

SOUTH-EAST DISTRICT.

GLENCOE (Average annual rainfall, 33.84in.).

May 18th.—Present: 14 members.

QUESTION BOX.—The meeting took the form of a "Question Box," when several interesting subjects were brought before the meeting. "What is the best variety of oats and also of wheat for this district?" Members considered Algerian oats, preferably Mortgage Lifter strain, and Zealand Blue wheat were best suited to local conditions. "Would pines planted 6ft. apart form a break to prevent sand from drifting?" Several members answered in the affirmative, but it was suggested that pines of low bushy growth would be more suitable than *Pinus* *insignis.* "What would be the most suitable grass for sowing on sandy soils?" Black Prairie and Subterranean Clover were recommended for soils of a light nature. For a wagon grease Mr. S. Bonney recommended the following preparation:—Half a gallon of mutton fat and one bottle of coal tar. Heat separately, and when boiling mix and stir thoroughly until cold. The stirring is essential to success. As a general purpose oil for harness fish oil and mutton fat or neatsfoot oil and mutton fat, heated and mixed together, was recommended.

MOUNT GAMBIER (Average annual rainfall, 32in.).

June 10th.—Present: 19 members.

Growing and Marketing Potatoes.—Mr. Wm. Hay, jun., read the following paper:—"To grow potatoes successfully one requires good land, good seed, plenty of moisture, and thorough cultivation. Only first-class land should be selected for growing potatoes for the market, as those grown on light sandy soils are generally of inferior quality and appearance, and tend to lower the market. The land should be in good heart, preferably that which has been under grass for a few years. This should be ploughed deeply in summer or in early autumn, and cultivated in dry weather both for early and late sowing. In the meantime the land could be sown down with green feed, and fed off until planting time. This advice applies to the good soils around Mount Gambier. The tubers should be planted according to variety. In volcanic soil they should be planted from 4in. to 5in. in depth, with about 29in. between the rows, and about 26in. between the sets. After planting, the ground should be harrowed often until the potatoes appear in rows, when they should be scarified, hand-hoed, and later moulded. Care should be taken not to mould in hot dry weather. Seed and Variety.—This is no less important than the selection of the land. There has been many varieties grown in this district. At one time that most grown was the Brown's River, which made a great name in the market for Mount Gambier as a potato growing district. From the Brown's River we went to the Redskin, and for years this held sway, but of late years the Pink Eyes for early, and Snowflakes for late growing have been grown generally. Whatever variety the grower chooses to plant, only the very best seed should be used, and after years of keen observation it has been proved beyond all argument that imported seed from Victoria grows the heaviest earliest crops, and also the best quality tubers. With regard to varieties suited for this district, growers should be careful and select not only a good cropping strain, but one that finds favor with the Adelaide market, so that when grown they have a ready sale. The Pink Eye, in seasons of copious rains, grows hollow, and consequently its market value is far below that of Carmens, Up-to-Date, or Scottish Triumph; in fact, this present season they were unsaleable. The Redskin has not been largely grown of late years around Mount Gambier, and growers in the Millicent and Rendelsham districts, who have always grown this variety, have found it very difficult to dispose of them this season; not that the quality or sample was inferior to that of other years, but that the 'market demand' of to-day is all for white, smooth-skinned, well-shaped potatoes of the Carmen and Up-to-Date variety. For early planting I would recommend Carmens and Up-to-Dates, and for middle and later crops, Carmens and Snowflakes. To substantiate this I need only to draw your attention to the large and continuous consignments of Victorian Carmens pouring into the Adelaide market, which at times have almost shut out the South-East. The Digging.—After dealing with soil, cultivation, varieties, and seed, we come to the final operations—the digging, sampling, and marketing. There it is, to my mind, that we have been careless and negligent in the past. Growers should impress upon diggers the necessity of using great care not to stab or cut the tubers unduly, to see that only sound, well-grown, good-shaped potatoes are put into the bags, and when dug the potatoes are not allowed to remain in the fields, but delivered to the market as quickly as possible, so as to retain a new and fresh appearance. The bags also should be carefully examined, and none but those that are clean and sound should be used for the large potatoes, for when the bags are rotten a proportion is lost in transit, and the consignment has a bad appearance. This applies particularly when they have to compete against consignments from the sister States, in new bags. The Value of Grading. —The whole of the grading, sampling, and marketing of potatoes must be put on a sound and proper footing, if the South-East is ever to regain the trade which has drifted of late years to Victoria. Our departments should be asked to take action immediately in this direction, before the opening of next season. Growers should be compelled to brand all their bags with a registered brand; and a law passed that any grower found with topped-up samples should be prosecuted, as is done in Victoria. If this was done, growers who now sample correctly would be protected, and those at fault would have to come up to the mark. Now it can readily be seen that with the regulations governing the importation of potatoes from one State into another, that all potatoes, in order to gain admittance, must be in new bags, and also be submitted to an inspection before entry, as well as an inspection before dispatching, ensures to the buyers of these the certain guarantee that the consignments are sound, and it naturally follows that the wholesale buyers purchase these, even at the advanced rate asked, as only the very best samples and quality are sent forward from the exporting State. Growers in the South-East must realise what an all-important factor it is to handle their potatoes in the manner mentioned. For instance, take the Broken Hill trade; this season new bags are required, and thus our growers who have been using old bags have been shut out of a market that for years has been supplied from here. In conclusion, to show how the potato trade has drifted to Victoria, I quote the number of bags railed to Adelaide and Port Adelaide from Victoria since July of last season. These are as follows:—1921—July, 26,221 bags; August, 29,209; September, 17,633; October, 9,956; November, 6,020; December, 6,725; 1922—January, 6,671; February, 5,520; March, 15,867. It will be seen this is a serious situation, and more especially when it is realised that all these tubers could be grown in the South-East, providing the growers paid the necessary attention to their cultivation. This would materially help the South-East, and also improve the land for the grain crops following.'' Mr. A. A. Sassanowsky said the growers in Mount Gambier had lost the Adelaide trade. The potatoes marketed by Victorian growers were far superior to those locally grown during the past few years. There was one item in the paper with which he did not agree, and that was the advice regarding the growing of a plot of green feed on the ground from which it was intended to produce a crop of potatoes. Stock were turned on to the crop, and when the land was ploughed to receive the potatoes it was found to be hard and caked. Then, when moulding operations were completed, the hard lumps of soil collected around the stalks, and allowed the air and grubs to get to the potato, which was thus ruined. Mr. J. Fletcher said the Victorian potato went to Adelaide with a guarantee, and the Mount Gambier product in old and rotten bags. It would be well if the Bureau took some steps, and saw that the tubers were put in new bags. Mr. H. H. Orchard (Orchard Instructor) said there had been some very fine samples of potatoes grown in Mount Gambier last season. In Victoria, inspectors had been appointed, and all potatoes were examined. The practice of ''topping up'' was carried to excess. On the top of a bag some nice potatoes would be seen, but if the sack were emptied it would be found that the major portion were very small. The following figures were given by Mr. Orchard in regard to the annual importation of potatoes into South Australia at Port Adelaide:—In 1917, 104,808 bags; 1918, 135,781; 1919, 154,240; 1920, 198,960; 1921, 167,376; and for the six months ended December 31st last, 95,764 bags. Mr. Hay said the land around Mount Gambier and Millicent was more suited for potato growing than any in Victoria. The local potato cooked better than the Victorian, and possessed a far nicer flavor. The point was that only the best of the Victorian potatoes found their way into the market, while locally everything that could be called a potato was sent in. That was one of the reasons why the Mount Gambier potato competed poorly in Adelaide. Mr. G. H. Kilsby agreed with Mr. Hay in growing a crop of green feed on potato land. He believed that a crop of mustard or rape was beneficial to the soil. He considered that the grading of the potatoes was neglected, and for that the diggers were mostly blameable.

RENDELSHAM.

June 8th.—Present: 13 members and visitors.

DRAINAGE.—In the course of a short paper on this subject, Mr. E. E. Stewart said 50 years ago all the peat lands around Rendelsham were one vast sheet of water, and after the drains were cut, and the water carried away, the land opened up with huge cracks, but after years of patient work in making subsidiary drains and deep ploughing, he could safely say that his peat land had subsided 18in., and was in better order for growing crops to-day than it was years ago.

Mr. Stewart strongly advocated deep ploughing, where possible, on the peat soils, for it was a great factor in sweetening the soils. He also gave some useful hints to any members who were likely to be constructing drains. Drains should never be constructed alongside of a fence, because the stock followed the fences and injured the drains. Also, such drains were difficult to clean out with a scoop. Mr. S. S. Smith indorsed Mr. Stewart's remarks, and stated that he did not believe in damming back water in the summer as a benefit for growing crops. Such a practice made the land sour, and encouraged parasites, which lived on the nitrogen bacteria, and enticed the roots of plants to feed near the surface of the soil. In hot, dry weather the roots were likely to be scorched by the heat of the sun, whereas if the ground was well drained and made sweet it encouraged the nitrogen bacteria, which were essential in all soils. It also encouraged the roots of plants to go down deep away from the action of the sun. He also believed that where possible deep ploughing was essential in swamp lands to give best results to good drainage.

KONGORONG, July 6th.—Mr. H. H. Orchard (Orchard Instructor and Inspector) attended the meeting and delivered an address, "Young Fruit Trees: How to Plant and Care for them during the First Year." The annual election of officers then took place.

KYBYBOLITE, June 8th.—Mr. L. S. Daire contributed a paper, "Ensilage," after which the speaker replied to a number of questions.

NARACOORTE, May 11th.—Mr. C. J. Jenner contributed a lengthy and interesting paper, "Boys and Girls' Clubs in Canada," and a good discussion followed. Mr. L. J. Cook (Manager of the Kybybolite Experimental Farm) attended the meeting, and outlined the rules and regulations governing herd testing societies as organised by the Department of Agriculture.

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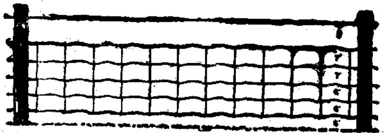

Fig. 7—Cyclone Spring Coil Sheep Fence.

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